



INSECUTOR INSCITIZÆ MENSTRUUS

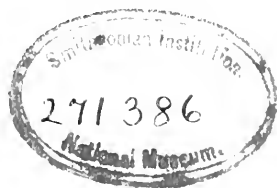
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NEW SPECIES OF TROPICAL AMERICAN MOSQUITOES

(*Diptera, Culicidæ*)

By HARRISON G. DYAR AND FREDERICK KNAB¹

Wyeomyia prolepidis, new species.

Proboscis rather long, slightly swollen at the tip, black, the labellæ slightly paler; palpi short, one-sixth the length of the proboscis; clypeus densely clothed with small, flat, dark-brown scales; membrane of the front more or less prominent between the tori and pale; occiput with flat back scales and a narrow border of small white ones continuously along the eye-margins, forming a large white patch on the lower part of the side. Prothoracic lobes with flat dark scales, having a dark violet reflection in some lights; mesonotum with flat black scales. Abdomen black above, white below, the colors separated on the sides in a straight line. Legs entirely black scaled, with slight bronzy reflections beneath, the femora paler beneath. Pleuræ pale brown with large dark brown stains. Wing scales dense, ovate and obliquely subtruncate, all blackish. Length, 3 mm.

Types, five females, No. 21779, U. S. Nat. Mus.; Culebra, Canal Zone, Panama, specimens caught by hand (L. H. Dunn).

Differs from any species known to us by the scales on the clypeus. Nearest in coloration to *W. galoa* D. & K. and *W. cacodela* D. & K.; but in these species the clypeus is entirely devoid of scales. The male, larva and life history are unfortunately unknown. This may be *Prosopolepis jocosa* D. & K.,

¹Mr. Knab died on November 2, 1918.

but seems a smaller, frailer insect. Without a known male, the position of *Prosopolepis* is somewhat uncertain. In the Monograph, we placed it with the *Joblotia* group on account of the contiguous eyes. Peryassú places it with the *Wyeomyia* group, and he may be in the right. We await the discovery of a male.

Wyeomyia fauna, new species.

Prothoracic lobes violet-blue; occiput dark-scaled, without white border to the eyes; abdomen black-scaled above, silvery white below, the colors separated on the sides in a nearly straight line; legs with the fore tarsi dark; mid tarsi with the tip of the first joint and the second to fifth marked continuously with white below; hind tarsi with the last two joints white all around; wing scales dense, broad, blackish, obliquely subtruncate.

Types, two males and one female, No. 21999, U. S. Nat. Mus.; Bas Obispo, Canal Zone, Panama, August 1913 (J. Zetek).

Close to *W. pandora* D. & K., of which it may be a variety.

Sabethinus moerbista, new species.

Head black-scaled, a white border to the eyes, narrowing above, forming a small spot on the vertex, widening into a large patch on the sides below; proboscis moderate, slightly thickened at tip. Prothoracic lobes large, contiguous dorsally, clothed with black scales, with some white ones at tip and base, changing with the incidence of the light. Mesonotum with dark bronzy scales; postnotum dark brown, devoid of scales, but with a group of dark bristles posteriorly. Abdomen black-scaled above, white below, the colors separated on the sides in a somewhat irregular line, the black projecting down a little at the posterior edge of each segment. Legs bronzy black scaled, the tarsi without any white markings. Wing scales large, broad, many obliquely subtruncate; cross-veins with the lower considerably within the other two. Length of thorax and abdomen together, 4 mm.

Type, female, No. 21995, U. S. Nat. Mus.; Rupununi, British Guiana (K. S. Wise).

Lesticocampa moralesi, new species.

Female. Palpi about one-third the length of the proboscis, equal in length to four joints of the antennæ, black-scaled. Abdomen black above, pale golden yellow below, the pale color projecting upward roundedly on the posterior end of each segment. Legs dark brown scaled with blue and bronzy reflections; a white spot at tip of hind tibia; hind femur with an irregularly shaped white ring at outer third. Wing scales broadly ovate, blackish; cross-veins nearly in line.

Types, two females, No. 21997, U. S. Nat. Mus.; San Felipe, Departamento Retalhuleu, Guatemala, and Finca San Basilio, Departamento Solola, Guatemala, 1,200 feet (Dr. Morales).

The species is closely allied to *Hyloconops longipalpis* Theobald, but the palpi are shorter.

Culex bonneæ, new species.

Proboscis and palpi black, unmarked, the palpi of the female short, those of the male exceeding the proboscis by nearly the length of the last two joints, which are slender and sparsely hairy. Head with narrow curved pale brown scales on the vertex and broader pale ones on the sides; many erect forked black ones on the nape. Integument of mesonotum brown, pale on the lateral angles and antescutellar space, clothed with narrow curved pale brown scales, without special pattern and sparse black bristles; pleuræ pale, with fine pale bristles. Abdomen normal, slender, the tip truncate, clothed dorsally with black scales, the tips of the segments with pale bristles; lateral spots whitish, triangular, basal, increasing in size posteriorly, scarcely visible from above; venter entirely sordid whitish scaled. Legs blackish brown scaled, the femora broadly whitish at base below and narrowly so nearly to the tips; tips of femora and tibiæ pale; tarsi entirely blackish. Wings hyaline, the outstanding scales narrowly ligulate. Length of female, 4.5 mm.; of male, 4 mm.

Male genitalia. Side pieces conical, about three times as long as wide, excavated at base; subapical lobe indistinctly divided, the outer portion with a group of about seven flattened setæ, the inner portion with three rods. Harpes thin, membranous, spinose at tip but without a basal arm; unci divided, first plate triangular, concave; second plate club-shaped, terminating in many denticles; third plate long and strap-shaped.

Larva. Head broad and subquadrate; antennæ with a tuft at the outer third of the joint, the part beyond slender; head hairs in threes, of equal length. Skin of the body spicular. Lateral comb of the eighth segment of many small scales in a patch three rows deep. Air-tube about twice as long as wide, curved on the posterior margin; pecten of about 12 teeth, running nearly the full length of the tube, the last three teeth very stout; hair tufts in about six pairs, crowded together posteriorly and also localized longitudinally forming a tuft, the hairs as long as the tube and extending beyond it. Anal segment ringed by the plate.

Cotypes, No. 21646, U. S. Nat. Mus., two males and three females, bred from larvæ found in a water barrel, in a very dirty puddle and in a tree-hole; Compagnie des Mines d'or, Lawa River, Dutch Guiana (Mrs. J. Bonne-Wepster), March, 1917.

This species belongs to *Culex* proper, the second plate of the male genitalia being formed as in *C. corniger* Theob. and *C. duplicator* D. & K., with which it should be placed. From *corniger*, it differs in the structure of the lobe of the side piece, and agrees with *duplicator*; but from the latter it differs in coloration, being a plainly colored form without any white markings. Our correspondent, in transmitting the material, identifies the species doubtfully as *C. palus* Theob., which, indeed, it might be as far as the coloration is concerned. However, we have identified *palus* with *similis*, etc. (Dyar, *Ins. Ins. Menstr.*, vi, 95, 1918), which differs in the form of the scales on the mesonotum.

Culex chryselatus, new species.

Proboscis black, the labellæ whitish; palpi short in the female, exceeding the proboscis in the male, but not greatly so, slender, with few hairs, the long joint with a white ring in the middle, the last two joints with minute basal rings. Antennæ blackish, plumose in the male. Head with dense, rather broad curved scales, golden yellow, with many erect forked golden ones. Mesonotum with the anterior part, somewhat less than half, clothed with narrow curved golden yellow scales, cut by five narrow impressed dark lines; this area is curved behind, and followed by uniform dark brown scales; bristles coarse, black. Abdomen black scaled, with small white spots at the bases of the third, fourth, and fifth segments; large quadrate basal segmental lateral white spots; venter pale, the posterior segments blackish posteriorly. Legs black, femora pale at base below, the tips white; hind tibiæ with a white spot at base, middle and apex; tarsi with white basal rings, small on front and middle legs, occupying the basal fourths of the joints on the hind legs. Wings hyaline, the outstanding scales narrowly ligulate. Length, about 3 mm.

Male genitalia. Side pieces conical, three times as long as wide, excavated at the base; lobe situated near the middle, consisting of a short rod with two stout setæ, one a little more basally inserted than the other; beyond this are four setæ in two pairs, stouter than those of the general vestiture and on slightly elevated bases. Harpes slender, comb-shaped, with about ten terminal teeth. Unci divided; an outer sheathing plate, laterally situated; a pair of basal hooks; a triangular curved plate, into the base of which is inserted by a socket a thin, membranous elliptical plate; fourth plate quadrate, sharply angled and with a retrose tooth.

Larva. Head wider than long, rounded on the sides. Antennæ long and slender, with long terminal spines; a very slight notch at the outer fourth bearing a many-haired tuft. Head hairs, upper a five-haired long tuft, lower single and long, third single and small. Skin of body glabrous. Lateral

comb of the eighth segment of many spines in a patch four rows deep, the anterior spines small, the posterior ones large and well separated. Air-tube very long and slender, flared at the base, straight and uniform beyond, some ten times as long as wide; a three-haired small tuft at basal third, a two-haired one near middle and a longer two-haired one at apical third. Pecten of about nine large well separated teeth on basal fourth of tube. Anal segment long, ringed by the plate; dorsal hairs, two long ones on each side.

The pupa has long air-tubes, which are pale with two blackish bands.

Cotypes, No. 21647, U. S. Nat. Mus., one male and two females, bred from larvæ in epiphytic Bromeliaceæ; Compagnie des Mines d'or, Lawa River, Dutch Guiana (Mrs. J. Bonne-Wepster), March, 1917.

This species belongs to the subgenus *Microculex* Theobald. The structure of the genitalia ally it to *C. inimitabilis* D. & K. and *C. ocellatus* Theob., being nearer to the former. The coloration of the legs, however, is different from that of any species known to us, being in that respect nearest to *C. daumas-tocampa* D. & K., next to which it should be placed.

Culex ocoassa, new species.

Proboscis and palpi black; occiput with narrow flat white scales on the sides, narrower at the vertex and mixed with black ones there; many erect forked black scales. Mesonotum brown, clothed with fine hair-like bronzy brown scales and black bristles; some of the bristles very long, coarse and dark brown; median grooves slight; antescutellar space bare. Abdomen blackish brown above, the segments somewhat paler at the bases on account of the pale bristles, but without bands; lateral quadrate white basal segmental patches; venter pale, the segments with apical blackish bands. Legs blackish brown, the femora whitish beneath, unmarked. Wing scales ovate, blackish, with a few linear outstanding ones.

Male genitalia. Side pieces conical, about twice as long as wide, emarginate at base; clasp filament simple, tapering out-

wardly and enlarged a little before tip, the terminal spine inserted before apex and widely appendiculate; apical setæ of side-piece long, one of them flattened and leaf-like; lobe divided widely, the outer portion slender, bearing a long hooked filament and a broadly expanded leaf with a long stem; basal portion stoutly arm-like, bearing a long hooked filament and a rod at its summit; an area of short tubercular setæ at apex of the basal emargination. Harpes comb-shaped, with seven coarse teeth. Unci divided, the first plate triangular, second horn-shaped; lateral sheathing plate very large, curved and darkly colored. No basal appendages, the penultimate segment roundedly projecting ventrally and coarsely setose.

Types, three males and three females, No. 21705, U. S. Nat. Mus.; Georgetown, British Guiana, March, 1910 (H. W. B. Moore).

This species belongs to the subgenus *Melanoconion* Theobald, as defined by Dyar (Ins. Ins. Menstr., vi, 92, 1918). In transmitting the material, Mr. Moore remarks: "This might be Mr. Theobald's *Gnophodomyia inornata*, but the type, or rather our type specimen, named by him for us, is so mouldy now that nothing much can be made out from it. The larva is abundant all the year round in sweet water canals along with that of *Aèdeomyia squamipennis*." In another letter he adds: "The adult, which is a blood-sucker, sometimes visits houses at night."

Gnophodomyia inornata Theobald (Journ. Econ. Biol., i, 21, 1905) was described from three females, one taken in a house, two bred from larvæ found in a hollow tree-trunk. There is no certainty that the three are conspecific, and it seems probable that they are not. The type would seem to be the specimen caught in the house and we would restrict it to this. It may be, and probably is, the same as this species; but that can not be said without a very critical examination. Theobald does not mention the white scales on the sides of the head which are present in our species. The specific name *inornata* becomes invalid, as there already exists a *Culex inornatus*

(Williston, U. S. Dept. Agr., Div. Ornith. & Mamol., No. Am. Fauna, No. 7, 253, 1893). The name *aikenii* Aiken will take its place (Brit. Guiana Med. Ann., 1906, 60, 1907). We hope this association is correct; but on account of the doubt, propose the name *ocossa*, as above, so as not to leave our species possibly nameless.

If this is in fact *Gnophodcomyia aikenii* Aiken (*inornata* Theob. not Will.), we would point out that *Gnophodcomyia* will fall to *Melanoconion* and the species will stand as *Culex (Melanoconion) aikenii* Aiken (= *inornata* Theob. = *ocossa* D. & K.).

***Aedes thaxteri*, new species.**

Proboscis and palpi black; vertex of head with a golden stripe, dark brown subdorsally and silvery scaled on the sides. Mesonotum brown, with two narrow golden lines running back two-thirds, followed by a single narrow golden line and two sublateral golden lines on the posterior half of mesonotum; lateral line narrow, silvery. Abdomen bluish black above, with lateral quadrate silvery spots at the bases of the segments, most distinct posteriorly; venter yellowish white, banded with black. Legs black-scaled, femora yellowish white beneath nearly to tips; knee spots silvery; fore tarsi unmarked, mid tarsi with a white spot at the base of the first joint, hind tarsi with white rings as the bases of the first three joints, the last two unmarked. Wing-scales black. Claws of the tarsi simple.

Type, female, No. 21704, U. S. Nat. Mus.; Grand Etang, Grenada, West Indies, bred from larvæ in bracts of *Heliconia*, November, 1912 (R. Thaxter).

The larva falls in the table with *busckii* Coq. Head rounded; antennæ small, with a single hair. Short abdominal tufts stellate; lateral comb of the eighth segment of large spines in a long patch about two rows deep; air-tube stout, about three times as long as wide, the pecten of five long spines, then a three-haired tuft, followed after a little space by one or two more spines, but the spacing is not such that they appear de-

tached; upper head hair single, lower a small tuft, not much larger than the third tuft; anal segment with ill-defined plate, spinose on hind margin; ventral brush small, rather plainly in two ranks; anal gills four, the upper pair larger than the lower.

A NOTE ON LESTICOCAMPA, AND A NEW SPECIES

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

In the monograph¹ we show that the name *Lesticocampa* should obtain for the collection of species there treated, since *Joblotia* Blanchard is based upon *digitatus* Rondani as type, and was proposed to replace *Trichoprosopon* Theobald, preoccupied by *Trichoprosopus* Macquart. We considered the possibility of *Goeldia* Theobald being an earlier name for *Lesticocampa* (page 186), but arrived at no definite conclusion. Peryassú separates *Goeldia* as having the male palpi short, about one-third the length of the proboscis, the postnotum with scales, the proboscis short and swollen at the apex. It is thus probably generically distinct from *Lesticocampa*. *Binotia* Blanchard (= *Runchomyia* Theobald, which, when emended, is preoccupied by *Rhynchomyia* Robineau Desvoidy) is said to possess a prominence on the front and is presumably separable by this. There remains, however, *Hyloconops* Lutz, the date of which is given as 1904, whereas *Lesticocampa* dates from 1906. However, on looking up Lutz's characterization of *Hyloconops* (in Bourroul), it is seen that no species is mentioned. The name *H. pallidiventer* Lutz occurs on page 49 as a new species, without description, the name being therefore a manuscript one. No species was described in *Hyloconops* till 1907 when Theobald, in volume iv of his monograph, describes *pallidiventer* and *longipalpis*, crediting the former to Lutz (1904) and the latter to Lutz MS. Lutz did not describe

¹Howard, Dyar & Knab, The Mosq. of No. & Cent. Am. & W. I., iii, 163, 1915.

pallidiventer in 1904 or at any other time, so far as known. A genus must be founded upon an established species. It cannot antedate its type. Therefore, *Hyloconops* postdates *Lesticocampa* and must be cited as a synonym thereof. That the two are the same, I make no doubt, after examining specimens of the two described species kindly presented by Dr. Arthur Neiva of Rio de Janeiro, Brazil. Peryassú attempts to separate *Hyloconops* from what he calls *Joblotia* (i. e., *Lesticocampa*) by the shape of the proboscis; but the difference is clearly insufficient.

A further synonym of *Lesticocampa* will evidently be the genus *Lynchiaria* Brèthes, founded on the single species *paranensis* Brèthes (Bol. del Inst. Ent. y de Patol. Veg., i, 40, 1912).

I have no specimens of the species, which is not sufficiently well known to place in a table. The describer does not mention the color of the legs. If we are to assume that they are uniformly dark, without white markings, the species will fall near *lunata* Theobald or *dicellaphora* Howard, Dyar & Knab, according to what the structure of the male palpi shall prove to be. The male has not been made known.

An interesting new species is before me:

***Lesticocampa trichopus*, new species.**

Head with blackish scales with bronzy and blue reflection, showing a strong white reflection over the whole vertex; prothoracic lobes very small, widely separated. Mesonotum with dense dark brown scales. Postnotum nude, blackish, with a central keel and a large group of setæ posteriorly. Abdomen blue-black above, yellowish white below, the colors separated on the sides in a nearly straight line, the ventral color extending upward a little in the centers of the posterior segments. Legs with blue-black vestiture, the mid tarsi with the last three joints yellowish white; hind tarsi with the first joint with some rough scales, the second with long black fringing scales; tip of the third, fourth, and fifth joints white. Wing scales ovate, blackish; cross-veins nearly in line, the posterior a little basal of the others.

Type, female, No. 21996, U. S. Nat. Mus.; Teffé [or Ega, State of Amazonas, Brazil], June, 1906 (Ducke), presented to the National Museum by Mr. F. V. Theobald at the instance of Dr. L. O. Howard. The specimen was included with some *Sabethes* which we had asked for and was probably, on a casual examination, mistaken for one at the time.

WESTWARD EXTENSION OF THE CANADIAN MOSQUITO FAUNA

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

The Canadian fauna comprises a complex of species of unequal distribution. We direct attention to the species inhabiting the northern forests and not found elsewhere as the essential constituents of the fauna. These species have been mainly described from the extremes of distribution, where the fauna touches the mountains of New York and New England; but it is a well-defined fauna, centering in the forests north of Lake Superior. I had carried the impression that this fauna was separated from that of the Rocky Mountains by a wide reach of prairie; but that is not the fact. Explorations conducted in the summer of 1918 show that the fauna follows the forests along the North Saskatchewan River right into the heart of the Rockies. The forest extends practically unbroken from Ontario to the Lake of the Woods and Lake Winnipeg, into which the Saskatchewan flows. The fauna, therefore, passes around the prairies to the north. It passes the summits of the Rockies and extends down the west slope into British Columbia. I hope to make the distribution in British Columbia the object of another exploration.¹

Besides my own material of 8,542 specimens, collected last summer, Dr. C. Gordon Hewitt has loaned me for examination 310 specimens collected along the Albany River in Ontario.

¹ See remark below under *Aedes pullatus*.

Several names have been proposed by the older authors for species in this fauna, and some of these names have been arbitrarily identified on the basis of the types being unrecognizable in this group. (Compare Howard, Dyar & Knab, Monograph, iv, 757.) The descriptions certainly are unrecognizable; but the types themselves may be identifiable by a competent examination, which has never been applied. I propose, therefore, to brush aside these identifications and list the following names to be identified later: *testaceus* van der Wulp,¹ *provocans* Walk., *impiger* Walk., and *implacabilis* Walk.

Mr. F. W. Edwards, who had charge of the mosquitoes at the British Museum until duties connected with the war took him away, kindly made a preliminary examination of the three Walker types for me. He found the specimens in very bad condition, as was anticipated, and he did not have with him Canadian material to compare, but his notes indicate that *impiger* is probably *punctor*, form *abserratus*, while *implacabilis* seems to be typical *punctor* (*auroides*). Of *provocans* from Nova Scotia I am not so sure; but it would seem to be typical *punctor*. It can hardly be the form described by us in the monograph as *provocans* (page 748), which is a dark form like *abserratus*. Further comparisons will be made, with specimens.

The species are treated in the order of importance, beginning with those most essentially Canadian and ending with those that, while occurring in this fauna, are also distributed elsewhere.

These species are essentially forest-lovers. They do not come out onto the prairie except for limited excursions after nightfall. The prairie species likewise keep to their own especial habitat; but the peculiar distribution of prairie and forest toward the north, where patches of forest occur in the prairie and then patches of prairie occur in the forest, makes the species dovetail in an interesting way. In Banff, Alberta, for

¹See the discussion under *Culex saxatilis*.

instance, typically a forested country, the Canadian fauna occurred everywhere; but there are open spaces in the valley and here *Aedes spencerii* and *A. currici* could always be found, though never seen in the forest. Likewise at Saskatoon, Saskatchewan, a typically prairie region, patches of bush occur in hollows in the prairie and along the river, and in these *A. punctor* was not infrequent. In addition, there exists a group of species whose habitat may be said to be the prairie forests. Mr. Knab, who had experience with these forms in 1907, was of the opinion that *A. fletcheri* was a prairie species and *A. riparius* a forest species. I am convinced that both occur together, roaming over the prairie in the general vicinity of bush, and extending a certain distance into the true forest. Moreover, the two are indistinguishable in the female adult and constitute a pair of species as in the case of *A. fitchii* and *A. ex-crucians*. They are easily separable by the male genitalia, but from localities where only females are at hand I have found it impossible to say which species was before me.

Exact determinations from the female adult alone of the species with black tarsi, also, are not always possible, for, while the mass of specimens runs true to type, variations occur that overlap specific limits. For example, dark examples of *punctor* cannot always be told from *intrudens*; blurred examples of *lazarensis* cannot be told from the double-striped form of *punctor*; pale *lazarensis* and dark *diantaeus* are not separable; small *pionips* cannot easily be told from large, well-marked *diantaeus*; *decticus* runs into *lazarensis* on the one side and *intrudens* on the other, so that there is a complete circle of gradations between these six species. This affords a margin of error in naming the captured females that I have not been able to guard against.

The specimens collected along the Albany River by Mr. H. N. Awrey, at the instance of Dr. C. Gordon Hewitt, are of especial interest because they include the locality, Martin Fall, Ontario, formerly known as "St. Martin's Falls, Albany River, Hudson's Bay," which is the type locality for *punctor* Kirby,

impiger and *implacabilis* Walker. Sixty-nine specimens were taken at Martin Fall, as follows:

<i>Aedes punctor</i> Kirby, form <i>centrotus</i> H., D. & K. (possibly including some <i>intrudens</i> Dyar, though I think not).....	52
<i>Aedes excrucians</i> Walk, (or <i>fitchii</i> F. & Y.).....	15
<i>Aedes diontaeus</i> H., D. & K. (or small <i>lazarensis</i> F. & Y.).....	2

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The specimens are all females and damaged, so the determinations cannot be made positive.

The same forms were taken along the Albany River at Height of Land, Osnaburg, Fort Hope and Ghost River; but on the shores of James Bay, although *punctor* persists, *fletcheri* and *curriei* appear, indicating comparative absence of forests.

TYPICALLY CANADIAN SPECIES

Aedes punctor Kirby.

Culex punctor Kirby, Richardson's Fauna Bor. Am., iv, 309, 1837.

Culex abserratus Felt & Young, Science, n.s., xx, 312, 1904.

Culicelsa auroides Felt, Bull. 79, N. Y. State Mus., 448, 1905.

Aedes centrotus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., 747, 1917.

Aedes provocans Howard, Dyar & Knab (? non Walker), Mosq. No. & Cent. Am. & W. I., 748, 1917.

This is the most dominant and widespread species of the Canadian fauna. Its limits are well known in the east, but it extends westward in the Rockies, how far has not been determined.

The usual form of adult has the mesonotum yellow-scaled, with a single square band of brown scales in the middle. This corresponds exactly with Kirby's types of *punctor* as carefully redescribed by Theobald, so that I have no doubt of the identification. The *auroides* of Felt is the same. The species also varies, giving rise to a form with the mesonotum almost uniformly brown, on which the names *abserratus* and *centrotus* have been founded. Felt further indicates larval differences between *auroides* and *abserratus*; but these are completely bridged in my series from White River, Ontario. The species is distinctly variable both as adult and larva.

Swarming of the males was observed at Dryden, Ontario, and Winnipeg Beach, Manitoba. At Dryden, while sitting under a pine tree at the edge of a cow pasture in which were many alder bushes and poplar trees, when the sun had set and it was getting distinctly dark, a male was seen going to and fro under the branches of the pine tree some six to eight feet from the ground. The insect could only be seen by looking toward the light sky. Other males joined this one and about a dozen gathered. In about half an hour, as the darkness deepened, they all disappeared. At Winnipeg Beach swarming took place by the edge of a road through tall poplars. A few males were seen high up opposite a projecting branch.

The differences given between *abserratus* and *auroides* are as follows:

abserratus: Larva. Comb scales, 6; head hairs single; pecten of tube about 15; adult with brown mesonotum (*centrotus* type).

auroides: Larva. Comb scales 12; head hairs double; pecten of tube about 20; adult with yellow mesonotum and brown stripe (*auroides*).

The table on page 16 shows the connection that I established between these forms. It is curious that the variation in the larva and adult seems to be correlated.

A variety occurs in which the median mesonotal stripe is divided, giving two brown lines, situated in a brown cloud, the sides of mesonotum pale. This resembles *decticus*, but some of the yellow color remains and there are no head-spots. An exactly similar form of *lazarensis* occurs, more commonly than this form of *punctor*.

Fresh mounts of the male genitalia show curved appressed setæ on the apical lobe of side piece. The genitalia are, therefore, not separable from those of *aboriginis* Dyar and *herodontus* Dyar, as previously supposed by me (Ins. Ins. Menstr., vi, 78, 1918). These species, *aboriginis* and *herodontus*, are probably derivatives of *punctor*, the genitalia retaining their specialized form though other characters have changed.

One thousand one hundred and eighty-one specimens were collected from the following localities: White River, On-

Sex	Isolation No.	No. of comb-scales	Head hairs	Pecten teeth	Adult
Male	C5	6	$\frac{1}{2} \mid \frac{2}{1}$	19	<i>centrotus</i>
Female ..	B39	7	$\frac{1}{2} \mid \frac{1}{2}$	16	dark <i>auroides</i>
Male	C111	8	$\frac{1}{1} \mid \frac{1}{1}$	16	{ <i>auroides</i> (double stripe)
Male	B18	9	$\frac{2}{2} \mid \frac{2}{2}$	17	<i>auroides</i>
Male	B44	10 & 11*	$\frac{2}{2} \mid \frac{2}{2}$	15 & 17*	do.
Male	B40	12	$\frac{-}{2} \mid \frac{-}{2}$	18	{ <i>auroides</i> with side stripes
Female ..	B43	13	$\frac{1}{1} \mid \frac{1}{1}$	23	do.
	C14	14	$\frac{1}{1} \mid \frac{1}{2}$	21	<i>auroides</i>
	C14	15	$\frac{1}{1} \mid \frac{1}{1}$	19	do.
	C9	17	$\frac{1}{2} \mid \frac{1}{2}$	18	do.

* Laterally dimorphic.

tario, June 12-27, 1918; Nipigon, Ontario, June 26, 1918; Dryden, Ontario, June 27-July 2, 1918; Kenora, Ontario, July 2, 1918; Winnipeg Beach, Manitoba, July 4-5, 1918; Prince Albert, Saskatchewan, August 14-15, 1918; Saskatoon, Saskatchewan, August 10-12, 1918; Red Deer, Alberta, July 29-August 3, 1918; Lochearn, Alberta, August 5-7, 1918; Lamoral, Alberta, August 6, 1918; Lake Minnewanka, Alberta, July 22, 1918; Banff, Alberta, July 9-15, 1918.

In addition, I have a specimen from Field, British Columbia, August 15, 1903 (H. G. Dyar), which was erroneously cited in the monograph (page 735) under *lazarensis*; Fort

Snelling, Minnesota (through C. S. Ludlow); Saxeville, Wisconsin, May 9-26, 1910 (B. K. Miller); Height of Land, Ontario, June 7, 1918 (H. N. Awrey); Osnaburg, Ontario, June 21, 1918 (H. N. Awrey); Fort Hope, Ontario, June 27, 1918 (H. N. Awrey); Martin Fall, Ontario, July 5, 1918 (H. N. Awrey); Ghost River, Ontario, July 7, 1918 (H. N. Awrey); Albany, Ontario, July 10-16, 1918 (H. N. Awrey); Attawapiscat, Ontario, July 13, 1918 (H. N. Awrey); Moose Factory, Ontario, July 26, 1918 (H. N. Awrey); Kenogami River, Ontario, June 30, 1903 (W. J. Wilson); Mammamattawa, Ontario, August 27, 1903 (W. J. Wilson); Dublin, New Hampshire, June 20, 1909 (F. C. Stowell); Sorrento, Maine, July 2, 1906 (———).

Aëdes lazarensis Felt & Young.

Culex lazarensis Felt & Young., Science, n.s., xx, 312, 1904.

Normally this is a medium sized mosquito, the mesonotum with dark yellow scales, two moderately broad dark brown median stripes and short posterior sublateral ones. A variety occurs in which the sides of the mesonotum are grayish, the yellow disk suffused with a brown shade, especially between the lines. This is indistinguishable from the corresponding aberration of *punctor*. This form occurs in the Rocky Mountains almost to the exclusion of the normal form.

The male genitalia as tabulated by me (Ins. Ins. Menstr., vi, 78, 1918) are incorrect. The apical lobe of the side piece is in fact well haired, the specimens which I had before me being in fact *decticus*, misidentified. The table may be corrected as follows:

23. Apical lobe of side piece weakly and sparsely setose..... 24
 This lobe more strongly setose..... 25
 24. Adjacent setæ of basal lobe nearly as long as the spine,

prodotes Dyar

These setæ shorter and weaker....*decticus* Howard, Dyar & Knab

25. Spine of basal lobe situated distally, *tahoënsis* Dyar, *altiusculus* Dyar
Spine of basal lobe situated basally..... 26
26. Setae on basal lobe many, much shorter than the spine,

lacarensis Felt & Young

These setae sparse, not much shorter than the spine.. *pionips* Dyar

Males were seen swarming at Kenora, Ontario. They appeared after sunset when it was becoming distinctly dark. They were seen on the top of a hill, flying before pine trees, being associated although not mixed with a swarm of *Mansonina perturbans* Walk.

The larva has the head hairs single; comb-scales numerous with feathered tips; pecten of the air tube uniform; anal segment with strongly chitinized plate, emarginate on the side.

Seven hundred and ninety specimens were taken as follows: White River, Ontario, June 13-25, 1918; Nipigon, Ontario, June 26, 1918; Kenora, Ontario, July 2, 1918; Dryden, Ontario, July 1-2, 1918; Red Deer, Alberta, July 30-August 3, 1918; Locheearn, Alberta, August 5-7, 1918; Lamoral, Alberta, August 6, 1918; Banff, Alberta, July 8-25, 1918; Laggan, Alberta, July 11, 1918.

Besides the localities cited in the monograph (Field, B. C. being incorrect), I have specimens from White Mountains, New Hampshire (H. K. Morrison); Saxeville, Wisconsin (B. K. Miller). See also my remarks under *intrudens* for locality Ottawa, Ontario, and *pullatus* for locality Kaslo, British Columbia. Mr. H. N. Awrey collected specimens at Height of Land, Osnaburg, Fort Hope and Ghost River, Ontario, in June and July, 1918.

Doubtful specimens before me, which may be this with narrow lines, or the form of *puncator* with median stripe divided, Kenogami River, Ontario, June 30, 1903 (W. J. Wilson); Nagagami River, Ontario, 20th portage, June 14, 1903 (W. J. Wilson); Nagagami River, Ontario, June 19, 1903 (W. J. Wilson). The mesonotal lines in these are narrow and light, in one blurred together, and I think they are forms of *puncator*. The continuation of this line of variation gives the mesonotum entirely golden yellow. I have taken this form rarely, about one in a thousand, but none of my bred material developed into it, so I do not know certainly whether it is a variety of *lazarensis* or of *puncator*.

***Aedes pionips*, new species.**

Similar to *lazarensis* F. & Y., but larger and more heavily marked. The mesonotum is light yellow scaled, the two median stripes broad, dark brown, contiguous and running back close to the posterior lateral stripes; legs black, knee-spots white; abdominal bands incised or broken on the dorsal line; wing-scales black; head yellow-scaled with a large black patch on each side.

Types, male and female, No. 21922, U. S. Nat. Mus.; White River, Ontario, June 19 and 21, 1918. A cotype has been deposited at Ottawa in the Entomological Branch, Department of Agriculture, Canada.

Males were seen swarming at Prince Albert, Saskatchewan. They appear after sunset when it is becoming distinctly dark, flying high in openings in the forest. They were over an overgrown road between dwarf spruces in a swamp and there was also a small swarm of *Aedes canadensis* present. The period of flight does not seem to last over half an hour.

Larvæ occurred in small mossy pools in a spruce swamp. They are large, dark colored fellows; head hairs in fives; other characters essentially as in *lazarensis*, but more pronounced.

Eggs were obtained from captive females at Red Deer. It is elliptical-fusiform, flattened on one side, the micropylar end sharply tapered, black, shining, very finely reticular-granular. The eggs are long and narrow and of good size. They are deposited singly, as usual in *Aedes*.

One hundred and fifty-two specimens were taken as follows: White River, Ontario, June 17-25, 1918; Nipigon, Ontario, June 26, 1918; Prince Albert, Saskatchewan, August 14-18, 1918; Red Deer, Alberta, July 30-August 3, 1918; Lochearn, Alberta, August 5-7, 1918; Lamoral, Alberta, August 6, 1918; Lake Louise, Alberta, July 11-17, 1918.

Besides the above, a single female was taken by Mr. Knab at White River, Ontario, June 24, 1907; another, Kenogami River, Ontario, June 30, 1903 (W. J. Wilson). One specimen, taken by Mr. Awrey on Albany River seems to be this, but I am not sure. The specimen has been returned to Ottawa.

Aedes diania Howard, Dyar & Knab.

Aedes diania Howard, Dyar & Knab, Mosq. No. and Cent. Am. and W. Ind., iv. 758, 1917.

This was described from New Hampshire from two damaged males, the species being founded solely on the male genitalia. The ornamentation is correctly indicated in the text, but wrongly in the table. The adult is indistinguishable in coloration from *lazarensis*. The mesonotum tends to be yellower, less of a buff or brownish yellow, but the difference is less than the variation. The two dark brown lines vary in width; the posterior lateral stripes are commonly weak, but sometimes well-developed. The male genitalia are, of course, very distinct.

The males probably swarm high. One evening, at White River, after sunset, a male was seen flying in the top of a small spruce tree in the forest, but no others were observed.

Larvæ occurred in small mossy pools in a spruce swamp. Head hairs in threes; antennæ very long, fully as long as the head, slender, uniformly tapered, a long tuft near the middle; comb of about 13 scales, each scale terminating in a long thorn; air tube about three times as long as wide, the last two teeth of the pecten widely detached, followed by the single tuft; anal segment with a large dorsal plate, reaching near the ventral line and roundedly edged.

The larva is as distinct and characteristic as are the male genitalia.

One hundred and twenty-eight specimens were collected, as follows: White River, Ontario, June 14-25, 1918; Nipigon, Ontario, June 26, 1918; Dryden, Ontario, June 27-July 2, 1918; Kenora, Ontario, July 2, 1918.

Mr. Knab got 29 specimens which I think are referable here at White River, June 25, 1907. I have no western records; but the species is so similar to *lazarensis* that it can only be certainly differentiated by males or larvæ, which are not at hand from the western places. A specimen taken by Mr. Awrey on Albany River, which I have returned to Ottawa, seems to be this. Another doubtful specimen is before me from Kenogami

River, Ontario, June 30, 1903 (W. J. Wilson); it is large and strongly marked, yet looks more like this than *flionips*.

Aëdes decticus Howard, Dyar & Knab.

Aëdes decticus Howard, Dyar & Knab, Monog., iv, 737, 1917.

Aëdes trichurus Howard, Dyar & Knab (in part, not Dyar), Monog., iv, 762, 1917.

Aëdes lazarensis Dyar (not Felt & Young), Ins. Ins. Menstr., vi, 78, 1918.

The type of *decticus* is a single female, strongly and aberrantly marked. The four black spots on the head are distinct, but they may be faint, confused or absent. The coloration is very variable, but usually characteristic. A female from White River, recorded in the monograph under *trichurus*, is this species. The male genitalia tabulated by me as *lazarensis* belong to *decticus*.

This species, like *intrudens*, extends slightly beyond the Canadian region, having been taken in Plattsburg, New York, and St. Paul, Minnesota. In spite of its wide range, the species was never clearly recognized, but was confused with other things. It is quite recognizable, however, when once apprehended.

The larva is close to that of *lazarensis*, being smaller and frailer. The anal segment has the plate without sharp lateral edge, thinning out below and obsoletely encircling the segment.

Two hundred and thirty-four specimens were obtained as follows: White River, Ontario, June 13-15, 1918; Nipigon, Ontario, June 26, 1918; Dryden, Ontario, June 27-July 2, 1918; Kenora, Ontario, July 2, 1918; Winnipeg Beach, Manitoba, July 4-5, 1918; Red Deer, Alberta, July 30-31, 1918; Lochearn, Alberta, August 5-7, 1918; Lamoral, Alberta, August 6, 1918.

Besides these, I have specimens from Plattsburg, New York, April 21, 1905 (H. G. Dyar); Elizabethtown, New York, April 25, 1905 (H. G. Dyar); Winnipeg, Manitoba, June 22, 1907 (F. Knab); Aitkin County, Minnesota, May 16, 1916 (C. W. Howard); St. Paul, Minnesota, May, 1916 (C. W. Howard). A single specimen, taken on Albany River by Mr. Awrey,

which I have returned to Ottawa, seems to be this, as well as the damaged condition allows me to judge.

✓ ***Aedes prodotes* Dyar.**

Aedes trichurus Howard, Dyar & Knab (in part, not Dyar),
Monog., iv, 762, 1917.

Aedes prodotes Dyar, Ins. Ins. Menstr., v. 118, 1917.

This is the Rocky Mountain form of *decticus*, differing slightly in the male genitalia. The basal lobe of the side piece has the setæ that are adjacent to the spine nearly as long as it, whereas in *decticus* they are distinctly shorter. Some of the adults resemble *decticus* closely in coloration, but most are browner, suffused, the two black lines lost and often only distinguishable from *intrudens* by the grayer scales over the antescutellar space. The larva is unknown.

Two females recorded from Banff in the monograph under *trichurus* are this species.

The males were seen swarming at Banff. On the summit of a hill on the Tunnel Mountain Road, covered with lodgepole pine and low bushes, swarms were observed low down about two feet from the ground, here and there in front of the bushes. This was at the usual swarming time, a quarter of an hour after sunset, which, in that latitude, was a quarter of 10 p. m. Half an hour later no swarms were to be found.

The Californian *A. cataphylla* Dyar is practically identical in marking with *prodotes*, but I think it is not the same, on account of the geographic discontinuity. Male and larva of *cataphylla* are unknown.

Eight hundred and one specimens rewarded my efforts, as follows: Banff, Alberta, July 7-26, 1918; Lake Minnewanka, Alberta, July 22, 1918; Laggan, Alberta, July 11, 1918; Lake Louise, Alberta, July 11, 1918.

At Lake Louise this was almost the only species flying, 401 specimens being taken in one day's collecting. Only three other species occurred, of which the most numerous was taken in seven examples.

Other records are: Bozeman, Montana (cotype of *pro-*

dotes); Banff, Alberta, August 16, 1903 (R. P. Currie); Lake Louise, Alberta, August 13-17, 1906 (Dyar & Caudell); Field, British Columbia, August 15, 1906 (H. G. Dyar); Mt. Cheam, British Columbia, August 7, — (J. Fletcher).

***Aedes intrudens*, new species.**

Culex impiger Felt (not Walker), Bull. 79, N. Y. State Mus., 316, 1904.

Aedes impiger Howard, Dyar & Knab (not Walker), Monog., iv, 755, 1917.

I propose this name for the species identified as *impiger* Walker by Dr. E. P. Felt, and fully treated under that name in the monograph. *A. impiger* remains to be identified, which may be possible from an examination of the types. I select as types of *intrudens* three males, Karner, New York, May 13, 1904 (N. Y. State Coll.); White River, Ontario, June 25, 1907 (F. Knab); Banff, Alberta, July 9, 1918 (H. G. Dyar). Type No. 21823, U. S. Nat. Mus.

This is the only species of the fauna whose adults enter houses, which they do persistently. Both at White River and Banff, with other species in abundance out of doors, only this was encountered within, and often in such numbers as to be distinctly annoying.

The species ranges throughout the Canadian fauna and also slightly beyond it. In the east it has been recorded from Massachusetts and it was abundant at Banff, Alberta, being the commonest species early in the season after *prodotes* began to diminish. It appears to be represented in the mountains of California by *A. fisheri* Dyar, of which the male and larva are unfortunately unknown.

Males were beaten from bushes, but the swarming was not observed.

Eggs were obtained from captive females at Banff. The single egg is rather stoutly fusiform, quite straight on one side, the two ends pointed about alike; black, shining, very minutely and slightly granular; micropylar area large. They are deposited singly.

One thousand seven hundred and nineteen specimens were obtained, as follows: White River, Ontario, June 12-25, 1918; Nipigon, Ontario, June 26, 1918; Dryden, Ontario, June 29-30, 1918; Winnipeg Beach, Manitoba, July 5, 1918; Lake Minnewanka, Alberta, July 22, 1918; Banff, Alberta, July 7-25, 1918; Laggan, Alberta, July 11, 1918.

Eastern records are found in the monograph under *impiger* (page 757). They are correct, except that "Ottawa, Ontario (J. Fletcher)" should be transferred to *lazarensis*.

The species with broad white rings at the bases of the tarsal joints may be separated as below, improving my genitalic table (Ins. Ins. Menstr., vi, 78-79, dichotomies 27-34), omitting *bimaculatus*, which does not concern us here.

An unfortunate difficulty arises under *sansoni*, described from females from Banff. I identified this as a supposed Rocky Mountain species, specimens having been cited from Drummond and Missoula, Montana, Juliaetta and Sand Point, Idaho, Modern, Colorado (Cockerell), and Salt Lake County, Utah, April 12, 1914 (C. T. Vorhies). The form is sufficiently distinct from *excrucians*; though close in the genitalia, the larva is very different, resembling *stimulans*. But it turns out that it does not occur at Banff! Males which I collected there last season belong to *excrucians* and *fitchii*, so it is clear that the name *sansoni* must be referred to the synonymy of one of these. I select *excrucians* as the larger and commoner species, not being able to tell these apart with females only.

This leaves the Rocky Mountain form again without a name. I therefore propose the name *MUTATUS*, specifying as types of ***Aedes mutatus***, new species, males from Missoula, Montana. Type No. 21918, U. S. Nat. Mus.

All the American species whose genitalia are known are given in the table, though only four of them concern us in the Canadian fauna. *A. stimulans* Walk. seems not to occur in the fauna proper, although taken in its southern limits (Plattsburg, New York). *A. excrucians* and *fitchii* are characteristic members of the Canadian fauna, though distributed somewhat

outside of it. *A. fletcheri* and *riparius* do not strictly belong to it, entering a certain distance from the wooded prairies, as remarked above.

Basal lobe of side piece with a stout spine, stouter than the setæ.

Spine very strong and distinct.

Basal lobe strongly tubercular-expanded; filament of harpago angularly widened beyond middle.....*stimulans* Walker

Basal lobe rugose-papillose, the area extending nearly to apical lobe; filament of harpago broadly expanded near base,
fletcheri Coquillett

Spine weak, scarcely differentiated from the adjacent setæ.

Basal lobe moderate.

Spine fairly strong; filament of harpago short notched at base,

fitchii Felt & Young

Spine weaker; filament without a basal notch.

Spines of basal appendages moderate.....*mimesis* Dyar

These spines long.....*palustris* Dyar

Basal lobe highly conical; filament of harpago long with broad knife-blade expansion.....*riparius* Dyar & Knab

Basal lobe without a spine.

Basal lobe rugose-papillose, the area reaching up nearly to apical lobe*excrucians* Walker

Basal lobe tubercular-expanded.

Filament of harpago angularly expanded toward base,

mutatus Dyar

This filament expanded beyond the middle.....*increpitus* Dyar

Aëdes excrucians Walker.

Culex excrucians Walker, Ins. Saund., 429, 1856.

Culex abfitchii Felt, Bull. 79, N. Y. State Mus., 381, 1904.

Culex siphonalis Grossbeck, Can. Ent., xxxvi, 332, 1904.

Aëdes sansoni Dyar & Knab, Can. Ent., xli, 102, 1909.

Aëdes euedes Howard, Dyar & Knab, Monog., iv, 714, 1917.

I have the following notes on the type of *Culex excrucians*: "*Culex excrucians* Walker. Type, identified as such by E. A. Waterhouse according to label; 'Saunders, 68-4;' folded label '*excrucians*' in Walker's script. Almost entirely denuded; both antennæ gone; two hind legs and one middle leg left, no terminal joints. Tarsal rings broad and basal; abdomen completely banded, uniformly brown (specimen looks as though it had been in alcohol); abdomen tapers and cerci are exerted." Notes made by Dr. L. O. Howard, dated June 25, 1909.

Clearly this represents one of the *fitchii* group. I have selected *abfitchii* as the most abundant and dominant species and therefore most likely to have been before Walker.

This species occurs throughout our area and extends outside of it, in the east as far south as New Jersey. Its westward limits are not yet known. Adult females tend to be larger than *fitchii* and have less of white scales on the wings, but the difference is far from being diagnostic.

Males were seen swarming at Banff. They fly shortly after sunset in small swarms, very high in openings in the woods, roads, or the tops of smaller trees. The swarms are loose and open, clustering for a few seconds in one spot, then dashing away to a distance. The swarming period does not seem to exceed half an hour.

Males were demonstrated from the following localities: White River, Ontario (F. Knab, 1907); Dryden, Ontario, Red Deer and Banff, Alberta (Dyar, 1918).

***Aedes fitchii* Felt & Young.**

Culex fitchii Felt & Young, Science, n.s., xx, 312, 1904.

Males were observed swarming at Banff. They fly in small groups, after sunset, high in openings in the forest, much as with *cxcrucians*, though they seem less wild and flighty. The smaller appearance of the specimens is noticeable.

Specimens recorded by me as *mimesis* from Aweme, Manitoba, June 13-July 10, 1910 (N. Criddle) (Ins. Ins. Menstr., v, 116, 1917), should be referred here.

Males were demonstrated from the following localities: White River, Ontario (F. Knab, 1907); Dryden, Ontario (Dyar, 1918); Winnipeg, Manitoba (Knab, 1907); Banff, Alberta (Dyar, 1918).

Unassorted specimens of *cxcrucians* and *fitchii* were taken in 1,370 examples, as follows: White River, Ontario, June 15-25, 1918; Nipigon, Ontario, June 26, 1918; Dryden, Ontario, June 27-July 2, 1918; Kenora, Ontario, July 2, 1918; Winnipeg Beach, Manitoba, July 4-5, 1918; Saskatoon, Saskatchewan, August 10-20, 1918; Prince Albert, Saskatchewan,

August 14-18, 1918; Red Deer, Alberta, July 29-August 4, 1918; Lochearn, Alberta, August 5-7, 1918; Lamoral, Alberta, August 6, 1918; Nordegg, Alberta, August 6, 1918; Calgary, Alberta, July 28, 1918; Lake Minnewanka, Alberta, July 22, 1918; Banff, Alberta, July 7-27, 1918; Lake Louise, Alberta, July 11, 1918.

Also females which may be *excrucians* or *fitchii* were collected at Martin Fall, Ontario, July 5, 1918 (H. N. Awrey); Fort Qu' Appelle, Saskatchewan, July 9, 1901 (J. Fletcher).

Aedes riparius Dyar & Knab.

Aedes riparius Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 213, 1907.

Described from Winnipeg, Manitoba. In the monograph we add the localities Aweme, Manitoba, and Saxeville, Wisconsin, from females and therefore not certainly placed. *A. fletcheri* Coq. is not distinguishable in the female. Demonstrated males are before me only from Winnipeg, the type locality. The larva is unknown.

Aedes fletcheri Coquillett.

Culex fletcheri Coquillett, Proc. U. S. Nat. Mus., xxv, 84, 1902.¹

This species has been considered peculiar to the prairies; but it occurs in the forest as well, as I demonstrated a male from Red Deer, Alberta, taken in spruce forest, August 3, 1918.

Unassorted specimens of *riparius* and *fletcheri* were taken in 127 examples, as follows: White River, Ontario, June 24, 1918; Nipigon, Ontario, June 26, 1918; Dryden, Ontario, June 30, 1918; Kenora, Ontario, July 2, 1918; Winnipeg Beach, Manitoba, July 4-5, 1918; Saskatoon, Saskatchewan, August 11-13, 1918; Prince Albert, Saskatchewan, August 14-17, 1918; Red Deer, Alberta, July 29-August 3, 1918; Lochearn, Alberta, August 5-7, 1918; Lamoral, Alberta, August 6, 1918.

¹The synonyms given in the monograph, *flavescens* Theobald (not Fabricius) and *arcanus* Blanchard, do not belong here, the form in question being from Finland as shown by F. W. Edwards (Entomologist, 1912, p. 218). It is said to be either *maculatus* Meigen, or a species near to that.

Large specimens of *fletcheri* or *riparius* were taken at Albany, Ontario, at the mouth of the Albany River, on James Bay, July 10, 1918 (H. N. Awrey).

***Aedes canadensis* Theobald.**

Culex canadensis Theobald, Mon. Culic., ii, 3, 1901.

Culex nivitarsis Coquillett, Proc. Ent. Soc. Wash., vi, 168, 1904.

This species is not confined to the Canadian zone, extending in the east to Florida. It is widespread in the northern forests. The larvæ frequent open pools and roadside ditches, not being found in the dark mossy pools in spruce forest which shelter the early stages of the species with black tarsi.

For observations on swarming of males, see note under *Aedes pionips*.

Five hundred and forty-one specimens came to hand, as follows: White River, Ontario, June 13-19, 1918; Nipigon, Ontario, June 26, 1918; Dryden, Ontario, June 30-July 9, 1918; Kenora, Ontario, July 2, 1918; Winnipeg Beach, Manitoba, July 4-5, 1918; Saskatoon, Saskatchewan, August 10-20, 1918; Prince Albert, Saskatchewan, August 14-17, 1918; Red Deer, Alberta, July 30-August 3, 1918; Lethbridge, Alberta, August, 5-7, 1918; Lamoral, Alberta, August 6, 1918; Banff, Alberta, July 19, 1918; Lake Louise, Alberta, July 11, 1918.

***Aedes vexans* Meigen.**

Culex vexans Meigen, Syst. Besch. Eur. Zweifl. Ins., vi, 241, 1830.

Culex articulatus Rondani, Bull. Soc. Ent. Ital., iv, 30, 1872.

Culex malariae Grassi, Rend. della R. Accad. dei Lincei, 1899.

Culex sylvestris Theobald, Mon. Culic., i, 406, 1901.

Culex vagans Theobald, Mon. Culic., i, 411, 1901.

Culex nocturnus Theobald, Mon. Culic., iii, 159, 1903 (♀ only).

Culex montcalmi Blanchard, Les Moust., 407, 1905.

Culicada nipponii Theobald, Mon. Culic., iv, 337, 1907.

Culicada minuta Theobald, Mon. Culic., iv, 338, 1907.

Culex stenotrus Theobald, Mon. Culic., iv, 395, 1907.

Culicada eruthrosops Theobald, Mon. Culic., v, 229, 1910.

Culex pseudostenotrus Theobald, Mon. Culic., v, 343, 1910.

Culex hirsutum Ludlow, Psyche, xviii, 126, 1911.

Aedes euochrus Howard, Dyar & Knab, Monog., iv, 716, 1917.

Widely distributed in temperate regions in both Europe and America.

A remarkable swarm of males was witnessed at Banff. The writer and a companion went down to the open field beyond the boathouse after sunset. On emerging from the tall timber that borders the road a swarm of males was seen overhead about 10 feet from the ground. There must have been about 500 specimens and this cloud followed us some 200 yards into the open, keeping directly overhead. A number were captured in the net, and the swarm dispersed, but quickly gathered again. After some 15 minutes, it having become nearly dark, on another attempt to net specimens the swarm dispersed and vanished completely, apparently flying back to the timber. Nothing was seen of it again.

Five hundred and sixty specimens of this species were taken, as follows: Dryden, Ontario, June 27-July 2, 1918; Kenora, Ontario, July 2, 1918; Winnipeg Beach, Manitoba, July 4-12, 1918; Saskatoon, Saskatchewan, August 10-20, 1918; Prince Albert, Saskatchewan, August 14-17, 1918; Red Deer, Alberta, August 1, 1918; Lochearn, Alberta, August 7, 1918; Lamoral, Alberta, August 6, 1918; Calgary, Alberta, July 28, 1918; Lake Minnewanka, Alberta, July 22, 1918; Banff, Alberta, July 7-27, 1918.

***Aedes cinereus* Meigen.**

Aedes cinereus Meigen, Syst. Besch., zweifl. Ins., i, 13, 1818.

Culex nigrutilus Zetterstedt, Dipt. Scand., ix, 3459, 1850.

Aedes fuscus Osten Sacken, Bull. U. S. Geog. Surv., iii, 191, 1877.

Culex pallidohirta Grossbeck, Can. Ent., xxxvii, 359, 1905.

Culex pallidocephala Theobald, Mon. Culic., v, 612, 1910.

This species is widespread in north temperate regions in Europe and America. The usual form has the abdomen without pale transverse bands, the lateral white spots being continuous, forming a straight pale stripe. About half of the specimens before me have the abdominal bands more or less distinct and in these the lateral spots are wedge-shaped and do not reach the posterior borders of the segments, thus not forming the characteristic lateral stripe.

Two hundred and seventy-two specimens came to hand, as follows: White River, Ontario, June 18-23, 1918; Dryden, Ontario, June 29-July 2, 1918; Kenora, Ontario, July 2, 1918; Winnipeg Beach, Manitoba, July 4-5, 1918; Saskatoon, Saskatchewan, August 12, 1918; Prince Albert, Saskatchewan, August 14-17, 1918; Red Deer, Alberta, July 29-August 2, 1918; Lochearn, Alberta, August 5, 1918; Lamoral, Alberta, August 6, 1918; Calgary, Alberta, July 28, 1918; Lake Minnewanka, Alberta, July 22, 1918; Banff, Alberta, July 7-27, 1918.

***Culicella dyari* Coquillett.**

Culex dyari Coquillett, Journ. N. Y. Ent. Soc., x, 192, 1902.

Culex brittoni Felt, Ent. News, xvi, 79, 1905.

This species is fairly closely confined to the Canadian region, extending not far beyond it. Larvæ were found at White River in the mossy pools with the black-legged *Aedes*.

Three adults were taken: White River, Ontario, June 20, 1918; Red Deer, Alberta, July 30, 1918.

The males of this species are strongly attracted to light. A collection of mosquitoes was made at arc lights in Wilmington, Massachusetts, in July, 1910, by Mr. H. S. Barber, with the following result:

Culicella dyari Coq., 107 males, 2 females.

Aedes canadensis Theob., 4 males, 15 females.

Aedes aurifer Coq., 1 male, 13 females.

Aedes vexans Meig., 3 males, 8 females.

Aedes excrucians Walk., 1 male, 4 females.

Aedes cinereus Meig., 2 males, 2 females.

Culex saratilis Grossb., 6 males.

Culex sp. (*restuans* or *pipiens*), 2 females.

Mansonia perturbans Walk., 1 male.

That over 60 per cent of these captures at light (or 80 per cent counting males alone) consisted of *dyari*, a species usually so rare as to be seldom taken, shows that the light must exercise a peculiar attraction for the species. Mosquitoes are not generally attracted to light in numbers, but of those that do come the males are in large excess of the females. This does

not appear in the above table, for, exclusive of *dyari*, there are 44 females to 18 males. I suppose this to be due to the fact that the collector could not distinguish between those females attracted to light and those that came with designs upon his person. That this is the correct explanation of the large number of females taken, I think is shown by a consideration of the *Culex*. The *saxatilis*, which bites frogs, was present only in males, whereas the *restuans* or *pipiens*, which will attack man, was represented by females. Moreover, I have a collection of mosquitoes taken at trap light in Lafayette, Indiana, by Mr. J. J. Davis, July, 1916, consisting almost wholly of *Aedes vexans*, and in this the males largely outnumber the females. The captures being made in a trap light excludes the element of attraction of the females for purposes of feeding.

***Culex restuans* Theobald.**

Culex territans Walker, Ins. Saund., Dipt., i, 428, 1856 (nomen non conservandum).

Culex restuans Theobald, Mon. Culic., ii, 142, 1901.

Culex brehmei Knab, Proc. Biol. Soc. Wash., xxix, 161, 1916.

Found rarely in the forested region in the east. The larvæ inhabit open pools with *Aedes canadensis*. This species ranges well to the south along the Atlantic seaboard.

Seven specimens were taken: White River, Ontario, June 16-July 4, 1918. Mr. Knab found third stage larvæ on June 24, 1907, also at White River.

***Anopheles occidentalis* Dyar & Knab.**

Anopheles occidentalis Dyar & Knab, Proc. Biol. Soc. Wash., xix, 159, 1906.

Widely distributed in the western United States, following the Canadian forests eastward. The species is rare in the north; only two specimens were taken: Kenora, Ontario, July 2, 1918.

***Mansonia perturbans* Walker.**

Culex perturbans Walker, Ins. Saund., Dipt., 428, 1856.

Culex ochropus Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 100, 1907.

This widespread species was found in the timbered country in the lake region. Eighty-five examples are at hand, as follows: Dryden, Ontario, June 30-July 2, 1918; Kenora, Ontario, July 2, 1918.

Swarming was observed at both Dryden and Kenora. The males appeared after sunset, swarming in a similar manner to *Aedes punctor* and *lazarensis* and in company with these species, although the swarms did not become mixed together.

Culiseta impatiens Walker.

Culex impatiens Walker, List Dipt., Brit. Mus., i, 5, 1848.

Culex pinguis Walker, Lord's Nat. in Vanc. I. & B. C., ii, 337, 1866.

Culex absobrinus Felt, Bull. 79, N. Y. State Mus., 481, 1905.

This species is characteristic of the Canadian fauna, but extends outside of it, reaching the Pacific coast and the mountains of California. Only five specimens were found: White River, Ontario, June 12-22, 1918; Red Deer, Alberta, August 1, 1918. At Red Deer a single male flew out of a cold well, but it was not possible to ascertain whether there were any larvæ in the water.

SPECIES ENTERING THE MARGIN OF THE CANADIAN ZONE

Culiseta inornatus Williston.

Culex inornatus Williston, U. S. D. A., Div. Or. & Mam., No. Am. Fauna, No. 7, 253, 1893.

Culex magnipennis Felt, Bull. 79, N. Y. State Mus., 278, 1904.

Widely distributed throughout the United States, entering the Canadian region only in mild, open localities.

Seventeen specimens were captured, as follows: Winnipeg Beach, Manitoba, July 9-19, 1918; Saskatoon, Saskatchewan, August 10-13, 1918; Lochearn, Alberta, August 5, 1918; Lamoral, Alberta, August 6, 1918; Banff, Alberta, August 1-5, 1918.

Culiseta incidens Thomson.

Culex incidens Thomson, Kgl. Sven. Freg. Eug. Resa, vi, Dipt., 443, 1868.

Culex particeps Adams, Kans. Univ. Sci. Bull., ser. 2, ii, 26, 1903.

This Pacific coast species enters the Canadian region only in the Rocky Mountains. Fourteen specimens were preserved: Banff, Alberta, July 26-27, 1918; Lake Louise, Alberta, July 18-23, 1918.

Culiseta alaskaënsis Ludlow.

Theobaldia alaskaënsis Ludlow, Can. Ent., xxxviii, 326, 1906.

This northern species enters the Canadian zone in the Rocky Mountains. Nineteen specimens are at hand, all from Banff, Alberta, July 7 to August 10, 1918.

Larvæ were found in a grassy pool by the railroad, separated by a few feet from the Echo River, the pool having evidently been filled by flood-water.

Head rounded, the antennæ small and dark, a tuft near the middle, the part beyond it tapering; head hairs multiple (7:4). Lateral comb of the eighth segment of many spines in a patch, the single spines with feathered tips. Air-tube about two-and-a-half times as long as wide; pecten of eight teeth with one large and one small branch, followed by long hairs to the middle of the tube. Anal segment ringed by the plate, which is perforated for the ventral tufts.

Aedes pullatus Coquillett.

Culex pullatus Coquillett, Proc. Ent. Soc. Wash., vi, 168, 1904.

Aedes acrophilus Dyar, Ins. Ins. Menstr., v, 127, 1917.

This species abounds in the higher Rockies, breeding in open muddy pools about lakes and rivers. It was scarce at Banff, apparently not extending out of the foot-hills.

To my surprise, *acrophilus* proves to be this species. It appears that I had obtained a wrong impression of *pullatus*, calling it a *gray* species, whereas the mesonotum is really yellow. Evidently my impression was based on some Kaslo specimens which are not *pullatus*, but either the western form of *lazarensis* or very large *prodotes*. These forms were not recognized from Kaslo at that time (1903); but it is probable that the Canadian fauna reaches that region in its entirety. My researches last year did not cover the area, as I stopped at the Continental Divide.

Males of *pullatus* were observed swarming at Banff after sunset, high in the spruce forest in little openings between the trees, some 10 to 15 feet from the ground. They could be reached only with a long net.

Two hundred and ninety specimens were obtained, as follows: Banff, Alberta, July 14-15, 1918; Lake Louise, Alberta, July 11-25, 1918. Only one *pullatus* was taken flying at Lake Louise, July 11, those brought from there being in larvæ and pupæ at that date.

Aedes hirsuteron Theobald.

Culex hirsuteron Theobald, Mon. Culic., ii, 98, 1901.

Culex pretans Grossbeck, Ent. News, xv, 332, 1904.

This species occurs at the eastern limits of the Canadian fauna and extends well to the south. A similar form, *aestiv-
alis* Dyar, appears in the western Rockies (Kaslo, British Columbia; Sand Point, Idaho), the two being apparently separated by a geographical interval. In the eastern wooded prairies a form occurs which I am in doubt about in the absence of male and larva. It is smaller than *hirsuteron* and *aestiv-
alis*, the mesonotum gray with median brown stripe, wing-scales black. It is larger than *aldrichi*, and does not show the divided mesonotal stripe of that species. I propose to hold it under the name VINNIPEGENSIS. Type of **Aëdes vinnipegensis**, new species, No. 21921, U. S. Nat. Mus. A cotype has been deposited at Ottawa, Canada.

Thirty-seven females, Winnipeg Beach, Manitoba, July 4-5, 1918.

Two of the specimens show a development of the posterior lateral stripes, accompanied by a brown lateral dot on either side of the mesonotal median stripe. I have also four specimens of the same from Aweme, Manitoba, July 6 and August 4, 1910 (N. Criddle). The costa, first and third veins look blacker than the subcostal, second and fourth veins, although all the scales are black.

Specimens of normal size appear farther south. I have 68 specimens from Fort Snelling, Minnesota, taken by Maj. E.

B. Frick on June 10, 1906 (communicated by Dr. C. S. Ludlow). The species must be common there. The adults have the partly bicolored veins of *vinnipegensis*; but this marking I detect in eastern *hirsuteron* also, although perhaps it is not quite so pronounced. The status of these forms must await the discovery of males and larvæ for elucidation.

Aedes trichurus Dyar.

Culex trichurus Dyar, Journ. N. Y. Ent. Soc., xii, 170, 1904.

Culex cinereoborealis Felt & Young, Science, n.s., xx, 312, 1904.

Rather unexpectedly, this species was not met with. This fact led to a reëxamination of the specimens listed in the monograph, where specimens are cited apparently continuing the range throughout the Canadian region. White River, Ontario, depends upon a single small female, which I consider to be *decticus*, of the form without the black lines; Aweme, Manitoba, depends upon a single large light gray female, which I think is really *trichurus*; Banff, Alberta, depends upon two females which are quite normal *prodotes*; Kaslo, British Columbia, is the type locality for *trichurus*. I see in this an analogy with *hirsuteron* as just described, namely an eastern and a western form and an intermediate form in the wooded prairies of Manitoba. Aweme is in southern Manitoba, southeast of Brandon near the Assiniboine River and, although I have not been there, I imagine the country is prairie with patches of bush. Therefore the western *trichurus* should differ slightly from the eastern, especially in the larva. This proves to be the case, the Kaslo form having about half as many scales in the lateral comb as the New York form, which I reared commonly at Plattsburg. The name *trichurus* Dyar will apply to the western form, that of *cinereoborealis* Felt & Young to the eastern one, while I now suggest the name **POLIOCHROS** for the Manitoban form. The type of **Aedes poliochros**, new species, is No. 21924, U. S. Nat. Mus., Aweme, Manitoba, June 3, 1904 (N. Criddle). The specimen is light gray, and I note no difference in the female from *cinereoborealis* F. & Y. The male and larva await discovery.

Culex saxatilis Grossbeck.

Culex testaceus van der Wulp, Tidsch, voor Ent. (2), x, 128, 1867.

Culex apicalis Adams (not Theobald), Kans. Univ. Sci. Bull., ii, 26, 1903.

Culex saxatilis Grossbeck, Can. Ent., xxxvii, 360, 1905.

Culex frickii Ludlow, Can. Ent., xxxviii, 132, 1906.

No adults were obtained, but larvæ occurred at Winnipeg Beach, Manitoba, in roadside puddles. The species is widely distributed in forested regions from ocean to ocean and from Canada to Mexico.

Culex testaceus van der Wulp was referred to *Aedes* in the monograph. In this I think we were misled by Theobald's action in identifying specimens with ringed tarsi as *testaceus*. It is more probably a *Culex* and an earlier name for the present species. The small size of the male, $2\frac{3}{4}$ lines, as given by the author, would seem to preclude any *Aedes* except *cinereus*, which, of course, is excluded by the short palpi. Moreover, I have a letter from Dr. C. Ritsema Cz, addressed to Mr. D. W. Coquillett, March 12, 1904, in which he says the type of *testaceus* in the Rijks Museum van Natuurlijke historie at Leyden has the palpi slender, not dilated, and but one tooth on the larger claw of the fore tarsi. These are characters of *Culex*, not of *Aedes*. He says further that there is no line of white scales on the penultimate joint of palpi below, which would make the species not *restuans*, but *saxatilis*. For the rest, the scales on the upper side of thorax and abdomen are said to be very pale yellowish white and the tarsi are unicolorous. The specimen is probably badly faded and bleached and the markings lost. An examination of the male genitalia mounted in balsam would decide the question positively of what *testaceus* is. Awaiting this possibility, I do not make the reference positively; but the evidence at hand points strongly as indicated. Unfortunately, the name *testaceus* is inappropriate and misleading, for this mosquito when fresh is black, certainly not testaceous.

It would be much more desirable if Adams's appropriate

name *apicalis* could be used. I have been under the impression that it was preoccupied by *Culex apicalis* Theobald; but Theobald has changed the name of his *apicalis* [to *neoapicalis*], evidently believing that Adams's name had priority. Moreover, Theobald's species is a *Psorophora* and not improbably a synonym or variety of *cingulatus* Fab., so the names at present repose in different genera. Still I am not in favor of using the name *apicalis* Adams unless it is shown to have priority. Theobald's *apicalis* was published July 25, 1903. I have not the exact date of Adams's paper at hand. It bears the date June, 1903, and very probably was published then, as the prospectus of the Bulletin says: "It has been decided to abandon the quarterly form of issue, and instead to publish the separate papers as soon as they are ready for the printer." Doubt is cast upon the matter by the fact that my copy is enclosed in a cover labeled "Science Bulletin, Vol. II, Nos. 1 2, and 3, November, 1903," received at the National Museum library February 1, 1904. Perhaps the articles were issued in two forms, first as separates and later together in the regular bimonthly bulletin form.

Aedes spencerii Theobald.

Culex spencerii Theobald, Mon. Culic., ii, 99, 1901.

This is a strictly prairie species, taken only in the open, although the openings may be quite restricted and surrounded by forest. Mr. Knab has published full observations upon the species. (Smiths. Misc. Colls., quart. iss., 1, 541, 1908.)

Fifty-seven specimens were taken. Saskatoon, Saskatchewan, August 11-19, 1918; Lochearn, Alberta, August 5-7, 1918; Lamoral, Alberta, August 6, 1918; Nordegg, Alberta, August 6, 1918; Banff, Alberta, July 8-20, 1918.

Aedes curriei Coquillett.

Culex curriei Coquillett, Can. Ent., xxxiii, 259, 1901.

Culex onondagensis Felt, Bull. 79, N. Y. State Mus., 278, 1904.

Aedes quaylei Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 191, 1906.

Culex lativittatus Coquillett, Ent. News, xvii, 109, 1906.

Grabhamia mediolineata Ludlow, Can. Ent., xxxix, 129, 1907.

(?) *Aedes campestris* Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 213, 1907.

This characteristic prairie species really does not enter the wooded Canadian zone at all; but it is found wherever open grassy spots occur, even well into the Rocky Mountains.

One hundred and forty-three specimens were taken, as follows: Winnipeg Beach, Manitoba, July 4-8, 1918; Wynyard, Saskatchewan, August 13, 1918; Saskatoon, Saskatchewan, August 13, 1918; Banff, Alberta, July 8-26, 1918.

I am citing *campestris* doubtfully in the synonymy because I have not been able to recognize it. Mr. Knab says the species is larger; I have large and small *curriei*, but they do not separate on the character. All mosquitoes vary in size. However, more work in the prairies may clear up the matter and show that the species is really a good one.

This species, *curriei*, reappears along the shores of James Bay (Hudson Bay), perhaps as a salt marsh breeder. I have specimens before me from Moose Factory, Ontario, July 26, 1918 (H. N. Awrey). A larger form, comparable with *campestris*, occurs on an island in James Bay, apparently to the exclusion of other mosquitoes; Charlton Island, July 19, 1918 (H. N. Awrey).

Dr. Hewitt has been good enough to obtain the following information from Mr. J. M. Macoun, of the Canadian Geological Survey, concerning conditions on the shores of James Bay: "From north of the mouth of the Rupert River all around James Bay to far beyond the Albany, the whole coast is bordered by marshes which in some cases extend many miles inland * * *. The vegetation in these marshes is chiefly *Carex*. Nowhere in Canada that I know of do mosquitoes occur in such numbers as around James Bay and along the west coast of Hudson Bay, where the conditions are very similar. I was on Charlton Island thirty years ago and do not remember that any part of the coast there is low. There may be some saline marshes, but I do not remember any. The island is wooded, and inland there are many ponds, small lakes

and marshes. The flora is identical with that of the mainland far from the sea."

Aedes aurifer Coquillett.

Culex aurifer Coquillett, Can. Ent., xxxv, 255, 1903.

This species should occur in the margin of the Canadian zone, but there are no Canadian records as yet. Besides the data in the monograph, which include Dublin, New Hampshire, and Elizabethtown, New York, I have undoubted *aurifer* from Minneapolis, Minnesota, July 2-3, 1903 (K. Taylor). In all of these three localities *punctator* occurs, showing them to be well within the Canadian zone.

Aedes triseriatus Say.

Culex triseriatus Say, Journ. Acad. Nat. Sci. Phil., iii, 12, 1823.

Finlaya (?) *nigra* Ludlow, Can. Ent., xxxvii, 387, 1905.

Aedes triseriatus var. *hendersoni* Cockerell, Journ. Econ. Ent., xi, 199, 1918.

This tree-hole breeding species probably does not come in the Canadian zone, although it reaches very close to it and may occur in the southern fringe. The northern spruce forests do not form holes holding water, and so the characteristic breeding places of this species are absent.

Aedes atropalpus Coquillett.

Culex atropalpus Coquillett, Can. Ent., xxxiv, 292, 1902.

This rock-hole breeding species may occur in the Canadian zone, in the eastern part. No records are at hand.

Aedes varipalpus Coquillett.

Culex varipalpus Coquillett, Can. Ent., xxxiv, 292, 1902.

Taeniorhynchus sierrensis Ludlow, Can. Ent., xxxvii, 231, 1905.

This western tree-hole species occurs in the Kootenai region of the Rocky Mountains, but has not yet been recorded from the main range.

SOME TROPICAL AMERICAN PHYCITINAE

(Lepidoptera, Pyralidæ)

By HARRISON G. DYAR

Mr. Wm. Schaus requested me to determine the Phycitinæ recently collected by himself and Mr. J. Barnes in Guatemala. Among the new species found, I mention here also other species that have been in the collection awaiting names.

✓ **Myelois palpalis**, new species.

Fore wing whitish gray, indistinctly suffused with dull reddish on the lower half and at base; lines indistinct, the inner forming a black dentate spot on cell; discal spots small, diffused; outer line pale, defined by streaks on the veins before and after. Hind wing whitish, translucent, gray on the costa, veins and terminal line. Expanse, 17 mm.

Type, male, No. 21929, U. S. Nat. Mus.; Cayuga, Guatemala, April (Schaus & Barnes).

Similar to *M. venipars* Dyar, but the palpi have the third joint about as long as the second instead of much shorter.

Fundella cistipennis Dyar.

Ballovia cistipennis Dyar, Proc. U. S. Nat. Mus., xliv, 323, 1913.

✓ *Ballovia* does not constitute a distinct genus from *Fundella*.

Fundella eucasis, new species.

Fore wing light gray, the basal space filled in with blackish; lines very indistinct, whitish, the inner oblique; discal marks only a trace. Hind wing white, translucent, the inner area yellowish brown. Expanse, 14 mm.

Type, male, No. 21930, U. S. Nat. Mus.; Caracas, Venezuela (Raymono).

✓ **Fundella argentina**, new species.

Fore wing light gray, thickly irrorated with blackish, especially on outer margin; inner line blackish, oblique, broad, narrowing below median vein, whitish edged without; discal dots blackish, somewhat diffused; outer line whitish, slightly ex-

curved mesially, preceded by dark points on the veins; a diffused marginal black line. Hind wing white, translucent, the inner area sordid yellowish. Expanse, 18 mm.

Type, male, No. 21931, U. S. Nat. Mus.; Tucuman, Argentina, March, 1905 (E. Dinelli).

✓ **Rhodophaea extrincica**, new species.

Fore wing blackish gray, the lines faint, whitish; inner line near middle of wing, the outer near the margin, coarsely waved; two black spots in the cell at inner line and two at end of cell; small blackish terminal dots. Hind wing white, translucent, gray on costa and termen. Expanse, 13 mm.

Type, male, No. 21932, U. S. Nat. Mus.; Santiago, Cuba, October, 1902 (W. Schaus).

There are also five males and two females from the same place. On the hind wings, vein 4 is very indistinct in the male, being almost coincident with 5; it is more distinct in the female.

✓ **Hypsipyla grandella** Zeller.

Nephoptyx grandella Zeller, Isis, 1848, p. 881.

Hypsipyla cnabella Dyar, Proc. U. S. Nat. Mus., xlvii, 405, 1914.

The specimens of *cnabella* are smaller, but I do not now think that any specific difference exists.

✓ **Hypsipyla denticosella** Dyar.

Sematocura denticosella Dyar, Proc. U. S. Nat. Mus., xlii, 105, 1912.

The species will find a better place in the genus *Hypsipyla* Ragonot.

✓ **Acromeseres**, new genus.

Hind wings with 8 veins; median nervure "bifid"; labial palpi upturned, reaching the middle of the front; vein 2 of hind wing arising before the end of the cell, which is moderately short, veins 3 and 5 appearing stalked; male antennæ simple; maxillary palpi dilated with scales; vein 8 of hind wing distinct; fore wing with veins 4 and 5 approximate at base, but separate; front of head smoothly scaled; on fore wing

vein 5 not in line with the median, 10 separate from the stalk of 8-9, a raised line of scales on basal third.

✓ **Acromeseres dialithus**, new species.

Fore wing light gray, irrorated with blackish; at basal third a band of black raised scales, from cell to inner margin, slightly oblique and followed by a broad orange-red area; discal dots small, black, separate; outer line faint, pale, wavy, edged with black within. Hind wing whitish translucent, gray on costa, ends of veins and outer margin. Expanse, 14 mm.

Type, male, No. 21933, U. S. Nat. Mus.; Santiago, Cuba, October, 1902 (W. Schaus). Also two males and five females from the same place.

✓ **Hemiptilocera jocarella** Schaus.

Acrobasis jocarella Schaus, Ann. Mag. Nat. Hist. (8), xi, 245, 1913.

No male is at hand, so that any generic placing must be uncertain; still the species looks so much out of place in *Acrobasis* that I have ventured to move it next to what certainly seem to be its allies.

Megarhtria cervicalis, new species.

Fore wing white on costal half, shading to dark gray on inner area, this color reaching costa at base and apex; a broad red-brown at base on costa and another at middle of cell, both oblique; a costal spot above the small discal dots; an oblique band in reverse direction from apex, crossing the small pale denticulate subterminal line; hind wing gray, translucent. In the neck behind the head are some very large flat white scales. The abdomen of the male is long and beneath before the claspers are curious curved white structures instead of tufts.

Type, male, No. 21934, U. S. Nat. Mus.; Tanamo, Cuba, August, 1901 (W. Schaus).

✓ **Cerocanthia subcaudata**, new species.

Fore wing light yellowish gray, irrorated with purplish; lines black, slender, the inner near the middle of the wing, the outer submarginal; discal dot yellowish; dark streaks on the

discal venules; a dark terminal line. Hind wing yellowish gray, ocherous on the inner area and especially the produced anal angle. Anal tuft of male voluminous, black below, ocherous at base above. Expanse, 16 mm.

Type, male, No. 21935, U. S. Nat. Mus.; Cayuga, Guatemala, May (Schaus & Barnes).

Markings much as in *Ulophora subsutella* Schaus, but the shape of the hind wing is entirely different.

***Pinipestis horneana*, new species.**

Fore wing light violet-gray, marked with red-brown; costa red to inner line; a median streak; inner line pale, waved, bordered broadly within with red and outwardly narrowly with brown; costa broadly red mesially, continued narrowly to inner margin and enclosing a pale, raised discal mark; raised scales also before inner line and in median space; outer line broad, pale, broadly bordered without by red; termen narrowly blackish; fringe interlined. Hind wing faintly yellowish gray, veins and termen slightly darker. Expanse, 28 mm.

Type, male, No. 21936, U. S. Nat. Mus.; Santiago de las Vegas, Cuba, bred from larvæ on pine (W. T. Horne).

***Dioryctria sysstratiotes*, new species.**

Fore wing light gray, irrorated with blackish; a black patch in basal space before inner line not attaining costa; lines black, the inner strongly angularly dentate, the outer excurved at vein 5 and denticulate below; discal dot pale; a brown patch below it; a brown area beyond outer line before termen; a terminal black line, finely cut. Hind wing translucent grayish; costa and termen gray; fringe interlined. Expanse, 26 mm.

Type, female, No. 21937, U. S. Nat. Mus.; Cayuga, Guatemala, June (Schaus & Barnes). Also two other females, one with the same data, the other, Perulha, Guatemala, July (Schaus & Barnes).

***Dioryctria majorella*, new species.**

Much as in the preceding, larger, more diffused; discal mark narrower, more oblique; outer line less angled, evenly dentate

from vein 5 to inner margin; inner line broader and not sharply defined. Expanse, 33 mm.

Type, female, No. 21938, U. S. Nat. Mus.; Jalapa, Mexico (Schaus collection).

✓ **Dioryctria drucei**, new species.

Fore wing dark gray; a diffused blackish area near base; a dull orange patch on basal third of inner margin, preceded by a black half-line and followed by the strongly oblique inner line, which widens into a triangular shade on costa; discal mark narrow, blackish, continued by a macular black shade to inner margin; outer line incurved above, oblique, scarcely denticulate, followed by a light line and a faint dark duplication; a terminal black line; fringe interlined. Hind wing sordid yellowish gray, darker on costa and termen. Expanse, 28 mm.

Type, female, No. 21939, U. S. Nat. Mus.; Rinconada, State of Vera Cruz, Mexico (Schaus collection).

The specimen bears a label in Druce's writing, "*Dioryctria simmermanni* Grote," and is obviously the specimen so recorded in *Biologia Centrali Americana*, Lep. Het., ii, 564, 1899.

Discopalpia ragonoti, new species.

Ragonot founded his genus *Discopalpia* on specimens from Guatemala which he had wrongly identified as *Myelois flavicans* Zeller from Colombia. The species is now before me, possessing the peculiar male palpi described by Ragonot. The markings of the wings are in no wise different from those of *flavicans*, so that the misidentification is very pardonable. The size also is the same.

Type, male, No. 21940, U. S. Nat. Mus.; Cayuga, Guatemala, May (Schaus & Barnes).

✓ **Piesmopoda flavicans** Zeller.

Myelois flavicans Zeller, Hor. Ent. Soc. Ross., xvi, 193, 1881.

Piesmopoda xanthopolys Dyar, Proc. U. S. Nat. Mus., xlvii, 332, 1914.

Zeller described from females only. Judging by localities solely, it is more probable that my *xanthopolys* (Panama) is

flavicans (Colombia), than that *flavicans* is the Guiana species with which I formerly identified it. The latter is described below as new. The male *xanthopolys* has the palpi very long and slender, obliquely upcurved and much exceeding the vertex.

✓ **Piesmopoda fratella**, new species.

Male palpi small, rather thickly scaled, not reaching the vertex of head. Coloration and size as in *flavicans* Zell.

Type, male, No. 21941, U. S. Nat. Mus.; St. Jean, Maroni River, French Guiana, March, 1904 (W. Schaus).

✓ **Aphycitopsis**, new genus.

Hind wings with eight veins, the median nervure "bifid"; palpi upturned, not reaching the vertex, vein 2 arising before the angle of the cell, which is very short; maxillary palpi of male filiform, the antennæ simple, minutely ciliate.

✓ **Aphycitopsis isabella**, new species.

Larger and longer-winged than *P. flavicans* Zell., but with the same pattern of coloration. The purple color is less extended at the anal angle, the yellow color running out there. Expanse, 18 mm.

Type, male, No. 21942, U. S. Nat. Mus.; Juan Vinas, Costa Rica, January (Schaus & Barnes).

✓ **Piesmopoda xanthozona**, new species.

Male antennæ with a notch at the base, formed by the angle of the basal joint from which the shaft arises opposed to the three basal joints of the shaft, which are hollowed, the third joint bearing an angle. Coloration as in *P. xanthomera* Dyar, in which, however, the male antennæ are simple and unmodified. Expanse, 15 mm.

Type, male, No. 21943, U. S. Nat. Mus.; St. Jean, Maroni River, French Guiana, April, 1904 (Schaus & Barnes).

✓ **Piesmopoda apocerastes**, new species.

Male antennæ with a notch at the base, the basal joint straight and long, the notch involving the basal eight joints of

the shaft and slightly scaled with brown on the inner side. Markings as in *P. xanthoudemia* Dyar, but with rather more pronounced patches of red scales along the costa. Expanse, 13 mm.

Type, male, No. 21944, U. S. Nat. Mus.; Juan Vinas, Costa Rica, November (Schaus & Barnes).

The specimen is labeled "*P. semirufella* Zell.," which may be correct; but I detect no trace of the pale inner line shown in Zeller's figure. Zeller described from two females, which were not identical, and the exact application of his name may not be cleared up for some time.

✓ ***Zamagiria laidion* Zeller.**

Myelois laidion Zeller, Hor. Ent. Soc. Ross., xvi, 211, 1881.

Ragonot places this in *Piesmopoda*, having no male. Sir George Hampson saw a male taken at Miami, Florida, by Mr. Wm. Schaus and labeled it *Elasmopalpus*. The present genus, however, seems preferable.

✓ ***Zamagiria masculinus*, new species.**

Fore wing light gray, a patch of dull reddish scales between the raised scales and inner line and in lower part of median space; raised scales at basal third, mixed with some black ones; inner line black, dotted, angled inward on vein 1; discal dots distinct, black, the lower elongate; outer line whitish, obscure, incised on disk, preceded by black markings on the veins; a row of terminal dashes. Hind wing whitish with grayish veins and terminal line. Expanse, 25 mm.

Type, male, No. 21945, U. S. Nat. Mus.; Cayuga, Guatemala, April (Schaus & Barnes).

✓ ***Zamagiria deia*, new species.**

Fore wing gray, darkly shaded along the costa; distinct red-brown shades in a streak in base, between raised scales and inner line and below discal venules; a black line at raised scales, not attaining costa; inner line about middle of wing, black, oblique, dotted, bent at right angles below median vein; discal dots black, the lower elongate; veins outwardly streaked

with black, a row of dots defining the pale outer line which is incised on discal fold. Expanse, 21 mm.

Type, male, No. 21946, U. S. Nat. Mus.; Chejel, Guatemala, June (Schaus & Barnes).

✓ ***Zamagiria ipsetona***, new species.

At first sight seeming the female of the preceding. There is, however, very little red-brown on the wing; the raised scales, while accompanied by black scales, do not form a line; the inner line is not angled, but runs, dotted above and waved below, straight across the wing; streaks on median nervules more pronounced, and lower discal dot elongate, elliptical. Expanse, 24 mm.

Type, female, No. 21947, U. S. Nat. Mus.; Juan Vinas, Costa Rica, June (Schaus & Barnes).

✓ ***Zamagiria striella***, new species.

Fore wing light gray, darker along the costa and terminally; a black streak along vein 1 from base to raised scales, where it widens out; a reddish area below median vein, followed by the inner line, which is blackish, faint, angled outward on submedian fold; discal dots small, separated; black streaks at bases of veins 2 and 3; some blackish scales in lower part of median space; outer line whitish, incised subcostally, edged within by black which is dotted on the veins; a row of terminal black dashes. Hind wing whitish, gray at apex and terminal line. Expanse, 21 mm. The tuft on the maxillary palpi is yellowish white.

Type, male, No. 21948, U. S. Nat. Mus.; Chejel, Guatemala, August (Schaus & Barnes).

✓ ***Zamagiria pogerythrus***, new species.

Fore wing light gray, darker along the costa; raised scales with black and red scales, followed by a patch of reddish scales centrally; inner line broken in cell, dotted on median and vein 1, black, a little angled outward; discal dots black, the lower one elongated and elliptical; veins black-lined outwardly, broken by the whitish outer line, which is indented subcostally;

a row of terminal black dots. Hind wing whitish translucent, gray along the costal edge and terminal line. Expanse, 21 mm. The tuft on the maxillary palpi is bright red.

Type, male, No. 21949, U. S. Nat. Mus.; Chejel, Guatemala, August (Schaus & Barnes).

✓ **Zamagiria hospitabilis**, new species.

Fore wing shaded with black so that the pale gray ground appears only in the raised scales and in a spot in lower half of median space; a dull reddish space between raised scales and inner line, which is whitish within, black without, not attaining costa; discal dots black conjoined; veins black-lined, reddish between; outer line whitish, incised above. Hind wing translucent, gray on costa, veins outwardly and termen. Expanse, 21 mm. The anal tuft of the male is dull ocher; that on maxillary palpi bright red.

Type, male, No. 21950, U. S. Nat. Mus.; Tanamo, Cuba, November, 1901 (W. Schaus).

Anegecephalesis catheretes Dyar.

Anegecephalesis catheretes Dyar, Ins. Ins. Menstr., v, 46, 1917.

This species looks much like a *Zamagiria* and is probably closely allied; but the maxillary palpi of the male bear a dense plate of scales instead of hairs. I bred this species also in 1898, but the specimens were mislaid. The food plant is *Dipholis salicifolia* as determined for me at the time by the late Mr. F. Kinzel.

Hyalospila burdettella Schaus.

Piesmopoda burdettella Schaus, Ann. Mag. Nat. Hist. (8), xi, 249, 1913.

Discopalpia semproniella Schaus, Ann. Mag. Nat. Hist. (8), xi, 249, 1913.

The types are both males and the same species, one being fresh, the other worn. The species seems best placed in *Hyalospila*.

✓ **Hyalospila clevelandella** Dyar.

Oryctometopia clevelandella Dyar, Proc. U. S. Nat. Mus., xlvii, 331, 1914.

The species may be removed to *Hyalospila*.

✓ **Hyalospila ptychis**, new species.

Fore wing gray at base of costa, white over the cell, the inner half and terminal area shaded with reddish violet; inner line lost; a black point in the submedian fold; discal dots black, separate, round; outer line slender, reddish, waved, incised and broken in submedian fold; a terminal row of minute black dots. Hind wing translucent, veins and termen gray. Expanse, 14 mm.

Type, male, No. 21951. U. S. Nat. Mus.; Santiago, Cuba, June (W. Schaus).

✓ **Homalopalpia columnella** Zeller.

Myelois columnella Zeller, Hor. Ent. Soc. Ross., xvi, 209, 1881.

Ragonot places this in *Piesmopoda*, having no male. The male has the same sexual characters as *H. dalera* Dyar, and I am not certain that the species are distinct. *H. columnella* seems somewhat larger.

✓ **Homalopalpia paranensis**, new species.

Male as in *H. columnella* and *dalera*, but the basal joint of the antennæ is brown instead of pale buff and has a smaller, less conspicuous notch. Fore wing with the base dark brown, the following pale band with a sharp curved yellowish edge, much as in the following species; outer line finely denticulate, also as in the following; the palpi, however, are broadly thickened with dark brown hairs as in *columnella*.

Type, male, No. 21952, U. S. Nat. Mus.; Castro, Parana, Brazil (Schaus collection).

✓ **Homalopalpia nerthella** Schaus.

Piesmopoda nerthella Schaus, Ann. Mag. Nat. Hist. (8), xi, 247, 1913.

Homalopalpia euthales Dyar, Proc. U. S. Nat. Mus., xlvii, 403, 1914.

The type of *nerthella* is a female, of *euthales*, a male, seeming at first sight quite distinct. I am satisfied that the differences are only sexual.

✓ **Eucardinia caricæ** Dyar.

Ulophora caricæ Dyar, Proc. Ent. Soc. Wash., xiv, 218, 1913.

Eucardinia caricæ Dyar, Ins. Ins. Menstr., vi, 139, 1918.

✓ The same peculiar sexual differences exist here as in *Homalopalpia*, although in less degree. The two genera should be associated.

✓ **Cuba**, new genus.

Hind wing with 8 veins, the median "bifid," vein 2 before the angle of the cell, which is very short, 3 and 5 not appearing stalked; labial palpi upturned, reaching above vertex, the maxillary palpi very slightly dilated with scales; vein 10 of fore wing from the cell; antennæ of male simple; no frontal tuft.

✓ **Cuba furculella**, new species.

Fore wing violaceous gray; a band at base on costa and inner line luteous brown, oblique, straight, parallel; a line in reverse direction touching the inner line on inner margin and running to apex; discal dots distinct, separate; outer line obscurely denticulate, pale, mesially a little outcurved, defined by dark dots on the veins; a terminal row of black dashes. Hind wing whitish, translucent, gray on the costa, upper veins and outer edge, the fringe slightly yellowish. Expanse, 15 mm.

Type, male, No. 21953, U. S. Nat. Mus.; Santiago, Cuba, December, 1902 (W. Schaus). The male has a trace of dark brown on the discal fold near base of fore wing. The uncus ends in two large hooks.

✓ **Procandiope**, new genus.

Hind wings with 8 veins, the median "bifid"; vein 3 from the angle of the cell; male antennæ with a groove at the base of the shaft bearing a tooth on one side but no tuft; maxillary palpi filiform; veins 4 and 5 of fore wing separate; 5 not in line with the median; 10 from the cell; front smooth; labial palpi slender, upturned, the third joint long and slender but not as long as the second.

Procandiope mamella, new species.

Fore wing yellowish white along the costa, the rest thickly overlaid with purplish scales; inner line near middle of wing; sharply toothed outward in cell, blackish, waved and fainter below; discal dots approximate, angular; outer line excurved below middle, pale, smooth, bordered within by blackish, which forms a patch in the outcurve of line; a row of terminal black dots. Hind wing gray, translucent over the disk, costal veins and termen darker. Expanse, 15 mm.

Type, female, No. 21954, U. S. Nat. Mus.; Trinidad River, Panama, March 2, 1912 (A. Busck).

Also a male and a female, Cayuga, Guatemala, May (Schaus = 2 ♀ & Barnes).

Nephopteryx bisra, new species.

Fore wing light gray, shaded with black at base; a broad inner black band, limited by a straight whitish line within and without, the two a little divergent on costa; a narrow black shade beyond; discal mark lunate, black; a faint oblique irregular line across median space, running inward and limiting a whitish patch on the inner margin; outer line smooth whitish, excurved on middle third, edged by a blackish line within and more faintly without; a terminal black line. Hind wing light gray, veins and terminal line darker; fringe interlined. Expanse, 21 mm.

Type, female, No. 21955, U. S. Nat. Mus.; Orizaba, Mexico (Schaus collection).

Anadelosemia, new genus.

Hind wing with 8 veins, the median nervure "bifid," vein 2 at the angle of the cell; veins 4 and 5 of fore wing separate, 5 not in line with the median; vein 10 from the cell; front smooth; labial palpi slender, upturned, the third joint about as long as the second; maxillary palpi slightly dilated with scales; male antennæ simple, minutely serrulate-pubescent.

Type, the following species:

✓ **Anadelosmia senesciella** Schaus.

Nephopteryx senesciella Schaus, Ann. Mag. Nat. Hist. (8), xi.
251, 1913.

✓ **Anadelosemia tecmessella** Schaus.

Ceracanthia tecmessella Schaus, Ann. Mag. Nat. Hist. (8), xi.
251, 1913.

✓ **Anadelosemia fifria**, new species.

Fore wing light gray; a black speck at base; inner line whitish, curved, edged with black without above and within below; discal spots small, narrowly separate; an oblique blackish irregular line from before apex to middle of inner margin, stained with red on discal fold; outer line blackish, faint, lost in a black cloud at apex, bordered macularly within by blackish; a terminal row of subconfluent dots. Hind wing translucent grayish, costa, veins and terminal line darker. Expanse, 15 mm.

Type, female, No. 21956, U. S. Nat. Mus.; Cayuga, Guatemala, May (Schaus & Barnes).

✓ **Anadelosemia base**, new species.

Fore wing light gray, marked much as in the foregoing species, the black mark at base large and obliquely terminated; discal spots blackish, but the oblique line and the edges of the outer line are brownish; terminal dots blackish. Expanse, 15 mm.

Type, female, No. 21957, U. S. Nat. Mus.; Cayuga, Guatemala, May (Schaus & Barnes).

Tlascala infinitella, new species.

Fore wing dark gray-brown; a raised line of white and black scales at basal third, perpendicular to costa; discal mark a trace of raised scales; outer line faint, whitish, traceable only below vein 5; a terminal black line. Hind wing yellowish gray, pale, shading to brownish gray on the margin. Expanse, 27 mm.

Type, female, No. 21958, U. S. Nat. Mus.; Orizaba, Mexico (Schaus collection).

Elasmopalpus puer, new species.

Fore wing dark gray, uniform; a small blackish discal dot; no other marks visible. Hind wing translucent whitish, gray along costa, veins and termen. Expanse, 16 mm.

Type, male, No. 21959, U. S. Nat. Mus.; Santiago, Cuba, February, 1902 (W. Schaus).

Ancylostomia euchroma, new species.

Fore wing ocherous, whitish lined between the veins in the cell, the costa dark ocher; apex slightly orange; area below the cell broadly red to end of cell, succeeded by purple to tornus, the purple obliquely limited inwardly; a single discal dot (lower); three dots on veins 2, 3, and 4 in oblique row; vein 1 interruptedly black-lined; no terminal dots. Hind wings whitish translucent, the terminal area gray-shaded in the female. Expanse, 25 mm.

Type, female, No. 21960, U. S. Nat. Mus.; Castro, Parana, Brazil (Schaus collection). Also a male with the same data.

Ancylostomia lithosella Ragonot.

Selagia lithosella Ragonot, No. Am. Phyc., 9, 1887.

Honora luteella Hulst, Journ. N. Y. Ent. Soc., viii, 223, 1901

Described from Arizona, but extends also south on the Mexican table land as far as Mexico City.

Pseudodivona cispha, new species.

Fore wing light gray, whitish on costal half; base reddish shaded, becoming black on costa; lines black, dotted, the inner cutting the red shade on inner margin by a white dash; discal venules black-lined, dotted before the pale outer line; discal dots small; a black wedge-shaped mark on costa at apex; a row of terminal black dots. Hind wing whitish translucent, the veins and terminal line gray. Expanse, 18 mm.

Type, male, No. 21961, U. S. Nat. Mus.; Volcan Santa Maria, Guatemala, October (Schaus & Barnes).

Also two males and a female from Guatemala and a damaged male from Costa Rica (Tuis, May).

✓ ***Pseudodivona carabayella***, new species.

Fore wing white, the inner area shaded with purplish red except at inner line where the white reaches inner margin; a black area on costa at base, followed by a dash in cell; costal edge black to end of cell; inner line black, angled. Obsolete below submedian fold; lower discal dot running onto the veins, the two obliquely placed and subconfluent; outer line forming an oblique dash to cell, suddenly projected outward and forming dots on the veins, obsolete below; subterminal line black above, whitish below, running faintly through the purple area, veins 2, 3 and 4 black-lined beyond; a terminal black line, cut on the veins. Hind wing whitish translucent, upper veins, costa and terminal line gray. Expanse, 27 mm.

Type, male, No. 21962, U. S. Nat. Mus.; Oconeque, Carabaya, Peru (Schaus collection).

Also three males from the same place, two of them being smaller (23 mm).

✓ ***Pseudodivona santa-maria***, new species.

Fore wing white on costal half beyond inner line, the base and inner area purplish; inner line white, crossing wing, with two sharp outward teeth centrally; upper discal dot small, lower elongate; outer line incised on discal fold, whitish, black-edged within, blackish on the veins below both before and after outer line; a row of terminal black dots. Hind wing grayish translucent, the veins, costa and terminal line darker. Expanse, 20 mm.

Type, female, No. 21963, U. S. Nat. Mus.; Volcan Santa Maria, Guatemala, July (Schaus & Barnes).

Also another female, Cayuga, Guatemala, May (Schaus & Barnes).

✓ ***Moerbes dryopella*** Schaus.

Zophodia dryopella Schaus, Ann Mag. Nat. Hist. (8), xi, 249, 1913.

Moerbes dryopella Dyar, Proc. U. S. Nat. Mus., xlvii, 337, 1914.

This species is interesting from looking exactly like a *Pseu-*

dodivona in coloration, but having markedly different venation in the hind wing, vein 4 being absent.

✓ ***Olyca nephelepasa*, new species.**

Similar to *O. pectinatella* Hampson, but entirely shaded with dark gray, only a little irroration of white at apex; discal dot black, at base of vein 4-5; outer line a trace, blackish, angled inward at vein 4; terminal dots diffused, faint. Hind wing whitish, apex grayish. Expanse, 43 mm.

Type, male, No. 21964, U. S. Nat. Mus.; Tehuacan, Mexico, September, 1910 (R. Müller).

✓ ***Olyca asthenosoma*, new species.**

Slender, the body long, the wings narrow; fore wing whitish, yellowish along the inner third; inner line whitish, edged with black on both sides, a sharp outward tooth on median vein and on submedian fold; a black oblique dash in median space from inner margin to origin of vein 2; outer line denticulate, incurved below vein 2, pale, edged with black dots on both sides; a terminal row of black dots. Hind wing transparent, the veins, costa and termen grayish. Expanse, 30 mm.

Type, male, No. 21965, U. S. Nat. Mus.; 60 miles up the Maroni River, French Guiana, August, 1904 (W. Schaus).

✓ ***Ozamia clarefacta*, new species.**

Fore wing whitish, the inner area shaded irregularly with rufous; a black patch close to base; inner line forming an oblique black bar from costa to submedian fold, then slender and incurved to inner margin; discal dots conjoined, lunate; two dots beyond and irregular scales on vein 1 below; outer line double, black, incised on discal fold, denticulate; a row of terminal black dots. Hind wing whitish, translucent, apex, vein 6 and terminal line gray. Expanse, 25 mm.

Type, female, No. 21966, U. S. Nat. Mus.; Orizaba, Mexico, April, 1910 (R. Müller).

Also a male and three females from Orizaba and Jalapa (Schaus collection).

The species occurs in Texas, having been confounded with the insular *O. lucidalis* Walker, which is a darker and diffusely marked insect.

Euzophera ticitoa, new species.

Fore wing brownish gray, shading to reddish on inner area; faint blackish longitudinal shading; inner line curved, pale, shaded with blackish beyond along costa; discal dots conjoined, linear; outer line pale, shaded with blackish before and after, incised on discal fold and shortly excurved below; terminal dots diffused. Hind wing translucent gray, brown on margin and fringe. Expanse, 19 mm.

Type, female, No. 21967, U. S. Nat. Mus.; Volcan Santa Maria, Guatemala, October (Schaus & Barnes).

Also a male from the same locality.

Euzophera came, new species.

Fore wing rather dark gray; inner line oblique, whitish, distinct, edged without with blackish, slightly toothed on submedian fold; discal dots blackish, not contrasted; outer line whitish, edged with blackish within, the middle third slightly produced and denticulate, incised on submedian fold; terminal dots black, subconfluent. Hind wing pale gray, nearly hyaline between the veins, median and vein 6 streaked with dark gray; costa and termen darker than the disk. Expanse, 15 mm.

Type, female, No. 21968, U. S. Nat. Mus.; Cayuga, Guatemala, June (Schaus & Barnes).

Also five other females from the same place.

Euzophera laura, new species.

Fore wing dark purple, the costal area white; inner line oblique, black, crossing the white area and obsolete below; discal dots separate; outer line white, pulverulent, even; some white powdering in terminal space; terminal dots black, small. Hind wing brownish gray, translucent on the disk between the veins. Expanse, 20 mm.

Type, female, No. 21969, U. S. Nat. Mus.; Cayuga, Guatemala, July (Schaus & Barnes).

Also a male in poor condition, from the same place.

✓ **Euzophera gais**, new species.

Fore wing brown, coarsely powdered with black; inner line beyond the origin of vein 2, whitish, straight, oblique, obsolete on the costal half; discal mark a black dash; veins 2-6 black lined; outer line whitish, straight, parallel to the margin; terminal dots small. Hind wing gray, translucent between the veins. Expanse, 14 mm.

Type, female, No. 21970, U. S. Nat. Mus.; Cayuga, Guatemala, June (Schaus & Barnes).

✓ **Euzophera perangusta**, new species.

Fore wing long and narrow; dark gray, thickly irrorate with blackish, a little dark red on inner margin at base, costa and submedian fold in median space; inner line whitish, angled on submedian fold; discal dots black, confluent; outer line whitish, dentate, parallel to the outer margin and therefore distinctly oblique; terminal dots black. Hind wing whitish translucent, gray at apex and narrow terminal line. Expanse, 25 mm.

Type, male, No. 21971, U. S. Nat. Mus.; Montserrat, Trinidad, British West Indies (Schaus collection).

✓ **Euzophera glabrella**, new species.

Fore wing gray-brown, dark and obscure; some blackish shading at base; inner line whitish, obscure, apparently produced on submedian fold; discal dots black, separate; outer line whitish, obscure, denticulate, parallel to the margin; some whitish powdering in terminal space; terminal dots black. Hind wing gray, translucent on the disk between the veins. Expanse, 16 mm.

Type, female, No. 21972, U. S. Nat. Mus.; Cayuga, Guatemala, April (Schaus & Barnes).

Also two males and two females from the same place.

✓ **Entmemacornis**, new genus.

Venation of *Euzophera*; male antennæ with a notch at the

base involving three joints, without tooth or conspicuous scales.

✓ **Entmemacornis proselytes**, new species.

Fore wing dark gray-brown, reddish brown and sordid white scales intermixed; base reddish, with a dark mark below median vein; inner line broad, pale, cut by a narrow dark center and followed by a broad dark area; discal dots small, black, separated; discal area somewhat translucent between the veins; black streaks on veins 5 and 6; outer line pale, incurved above, with preceding and following black dots; terminal dots blackish, illy defined. Hind wing translucent grayish, a little darker in the female than in the male, veins and termen not translucent. Expanse, 16 mm.

Type, female, No. 21973, U. S. Nat. Mus.; Cayuga, Guatemala, April (Schaus & Barnes).

Also two males and a female from the same place.

✓ **Cacozophera**, new genus.

Venation of *Anthropteryx* Dyar; wings long and narrow, trigonate, the apex pointed, not short and square.

✓ **Cacozophera venosa**, new species.

Fore wing brown, powdery, translucent between the discal nervules in a certain light; median vein and branches black-lined; yellowish white powdering along inner margin and terminally; inner line lost; outer line pale, parallel to outer margin, cutting the black veins; terminal dots large, intravenular. Hind wing gray, translucent, veins, costa and terminal line darker. Expanse, 19 mm.

Type, female, No. 21974, U. S. Nat. Mus.; Cayuga, Guatemala, May (Schaus & Barnes).

✓ **Relmis yddiopsis**, new species.

Fore wing gray; a red streak along submedian fold; a blackish shade at base; inner line pale, straight, followed by a very broad dark area; discal dots confluent; outer line pale, incised on discal and submedian folds, preceded by a broad dark area,

which is streaked on the veins and reaches discal mark; terminal dots blackish. Hind wing dark gray, translucent between the veins. Expanse, 20 mm.

Type, male, No. 21975, U. S. Nat. Mus.; Tanamo, Cuba. March, 1902 (W. Schaus).

Also another male from the same place.

Bema fritilla, new species.

As in *B. myja* Dyar as far as can be distinguished in the rubbed specimens. The species is, however, of half the size, and in the male there is a patch of white scales dorsally preceding the anal tuft; in *myja* the white scales are laterally in the incisure. Expanse, 11 mm.

Type, male, No. 21976, U. S. Nat. Mus.; Cayuga, Guatemala, June (Schaus & Barnes).

Also a female from the same locality.

Bema convergens, new species.

Fore wing light yellowish gray, only traces of discal and terminal dots showing, as the specimens are rubbed. Hind wing translucent, veins and termen gray. Expanse, 15 mm. The male has no black or white scales preceding the anal tuft, which is concolorous with the abdomen.

Type, male, No. 21977, U. S. Nat. Mus.; Cayuga, Guatemala, May (Schaus & Barnes).

Also a female from the same locality.

Mescinia bacerella, new species.

Fore wing blackish gray, the costal edge white with red stains; inner line obsolete, indicated by black points; a white line on median vein; discal dots elongate, separate; outer line slender, whitish, an inner blackish edging more distinct than the line; terminal area paler and reddish; a terminal black line. Hind wing translucent, gray on costal veins, terminal line and fringe. Expanse, 12 mm.

Type, male, No. 21978, U. S. Nat. Mus.; Havana, Cuba (C. F. Baker).

Mescinia pandessa, new species.

Fore wing light gray, white along the costa; a black streak along costa at base, a broken one along vein 1 and a narrow one on submedian fold; inner line represented by two dots; discal dots separate; outer line whitish, obsolescent, its inner edge black, straight, not quite attaining costa, but followed by a short apical outer segment which does attain costal edge; terminal line black, not quite reaching apex. Hind wing translucent, costa, veins and terminal line gray. Expanse, 13 mm.

Type, male, No. 21979, U. S. Nat. Mus.; Cayuga, Guatemala, April (Schaus & Barnes).

Also four males from the same place.

Mescinia imperfecta, new species.

Fore wing dark gray, scarcely lighter on costa; some black scales on base of costa and inner margin and along submedian fold; discal dots conjoined, large, round, single; outer line whitish, straight, without dark edges. Hind wing translucent gray, veins and termen darker. Expanse, 14 mm. The specimen is not in fresh condition.

Type, female, No. 21980, U. S. Nat. Mus.; Cayuga, Guatemala, April (Schaus & Barnes).

Strephomescinia, new genus.

As in *Mescinia*, but veins 4 and 5 of fore wing united.

Strephomescinia schausella, new species.

Fore wing whitish gray, sparsely strewn with black atoms; the irrorations form a band below submedian fold outwardly; discal dots elongate, separate; a thick terminal black line. Hind wing whitish translucent, veins, costa and termen gray. Expanse, 9.5 mm.

Type, male, No. 21981, U. S. Nat. Mus.; Santiago, Cuba, June, 1902 (W. Schaus).

Eucampyla oconequensis, new species.

Fore wing dark gray, the white scales predominating on costa toward bases; lines obsolete, the inner indicated by a

broad, slightly paler area, margined faintly without with blackish; lower discal dot present, blackish; no outer line, no terminal dots. Hind wing translucent pale gray, darker on costa and margin. Expanse, 21 mm.

Type, female, No. 21982, U. S. Nat. Mus.; Oconeque, Carabaya, Peru (Schaus collection).

✓ **Campyloplexis**, new genus.

Hind wing with 7 veins, vein 2 from long before the angle of the cell; 3 and 5 stalked; cell short; labial palpi porrect; cylindrical, smooth; veins 3, 4, and 5 of fore wing stalked.

✓ **Campyloplexis inveterella**, new species.

Fore wing whitish gray, a dark gray shade along inner margin, narrowing to tornus; costal edge clear, the veins otherwise irrorated with dark, intensified on the discal cross-vein and on the venules outwardly in the usual position of outer line; termen darkly shaded. Hind wing translucent, the veins, costa and margin gray. Expanse, 14.5 mm.

Type, male, No. 21983, U. S. Nat. Mus.; Cayuga, Guatemala, June (Schaus & Barnes).

Also another male from the same locality.

Vitula macropasa, new species.

Fore wing long and narrow, dark gray; lines diffused, whitish, the inner broad and followed by a blackish shade, the outer oblique, exerted slightly on its middle third, preceded by black streaks on the veins; black streaks also in terminal space, the terminal dots small; discal dots elongate, separate. Hind wing whitish translucent, gray on veins, costa and outer margin. Expanse, 21 mm.

Type, female, No. 21984, U. S. Nat. Mus.; Purulha, Guatemala, July (Schaus & Barnes).

Also five males and eleven females from the same place, Chejel and Volcan Santa Maria.

✓ **Drescomopsis**, new genus.

Hind wing with 7 veins, 2 arising from the angle of the cell

FW
or shortly beyond, 3 and 5 stalked; fore wing with 2 to 5 near end of cell, separate, 4 and 5 not in line with the median; palpi upturned; front smooth.

✓ **Drescomposis subelisa**, new species.

Fore wing whitish along costa, purplish on inner area; dark olivaceous brown at base; inner band of the same color, broad, oblique and half crossing wing; discal dots small, a brown mark on costa opposite; a brown shade from apex, running in to end of cell; outer line pale, edged with dark on both sides, the vein lined; terminal dots small. Hind wing gray, translucent between the veins, dark on the margin. Expanse, 14 mm.

Type, female, No. 21985, U. S. Nat. Mus.; Cayuga, Guatemala, June (Schaus & Barnes).

Also a female from the same place and one from Cordoba, Mexico, August, 1908 (F. Knab).

✓ **Eurythmia santiagella**, new species.

Fore wing dark gray, the basal area lighter; inner line pale, straight, rather broad; discal dots black, connected by a slender line; outer line pale, minutely wavy, preceded by indistinct black dots; terminal dots obsolete. Hind wing whitish translucent, veins, costa and terminal line gray. Expanse, 14 mm.

Type, female, No. 21986, U. S. Nat. Mus.; Santiago, Cuba, February, 1902 (W. Schaus).

✓ **Homoeosoma cubella**, new species.

Fore wing reddish gray, whitish along costa; a narrow black line along vein 1 and median vein; inner line represented by one or two black dots; discal dots black; outer line obsolete, indicated by a dark shade on costa. Hind wing translucent gray, veins and termen darker. Expanse, 15.5 mm.

Type, female, No. 21987, U. S. Nat. Mus.; Baracoa, Cuba, March, 1902 (W. Schaus).

This may be the same as *H. musiosum* Dyar from Panama; but I keep them separate at present largely on the locality.

***Plodia dolorosa*, new species.**

Fore wing uniform dark purple brown, the veins black-lined, but not contrasted; terminal line blackish. Hind wing dark gray, translucent between the veins. Expanse, 17 mm.

Type, female, No. 21988, U. S. Nat. Mus.; Cayuga, Guatemala, September (Schaus & Barnes).

Also six males and four females from the same place.

In abraded specimens, the veins become contrasted and the interspaces translucent. Costal fold and tuft on under side of fore wing of male reaching less than one-third the length of cell.

***Poujadia chejelis*, new species.**

Costa whitish to middle of cell, irrorate with rosy scales; rest of wing rosy purple; a diffuse black shading along and beneath median vein, dividing on veins 2 and 5; an indistinct discal dot; fringe brownish. Hind wing pale yellowish gray, the costa and upper veins shaded with gray, a faint discal mark on the cross-vein. Expanse, 20 mm.

Type, male, No. 21989, U. S. Nat. Mus.; Chejel, Guatemala, August (Schaus & Barnes).

OBSERVATION ON THE LIFE HISTORY OF *Aedes bimaculatus* COQ.

(*Diptera, Culicidae*)

By HARVEY P. BARRET

As little is known and almost nothing has been written on the life history of *Aedes bimaculatus* the following observations may be of interest. The writer has had under observation for the past several years a "sink hole" in a thicket at the edge of the city of Charlotte, North Carolina. This hole is about 200 yards from the nearest dwelling and except for a few scattered houses is really in the country. During a rainy season and nearly always after a heavy rain there is a foot or more of water there. In fact there is usually some water there

from midwinter until late spring, but this could hardly be classed as a permanent body of water. Quite a variety of larvæ are to be found there at different seasons. After the heavy rains of July, 1916, the hole held about 4 feet of very muddy water. In looking for larvæ the writer was able to see only the tips of the breathing tubes of most species present. A striking contrast was presented by the larvæ of *Aedes bimaculatus*. These individuals lay almost parallel to the surface of the water and their dark brown bodies were easily picked out against the light yellow of the muddy water. So far as the writer knows, this position at the surface has heretofore been mentioned as a characteristic only of *Anopheles* and *Uranotania*. The larvæ were present in fairly large numbers. Bred specimens were sent to the late Mr. Knab, of the Bureau of Entomology, for determination. Mr. Knab called attention to another fact of interest, namely, that this is a new northern locality record of this species. Specimens have been taken heretofore in Texas, Louisiana, Mississippi, and Arkansas.

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Insecutor Inscitiae Menstruus

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Subscriptions and matter for publication should be addressed to Harrison G. Dyar, 804 B Street SW., Washington, D. C.

Authors' separates will be furnished at cost on orders accompanying the manuscript.

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A NEW OLETHREUTID FROM NEW YORK

(*Lepidoptera*)

By CARL HEINRICH

***Olethreutes approximana*, new species.**

Palpi creamy ochreous; terminal joint and end of second joint smoky fuscous. Face smoky fuscous. Head tuft and thorax dull ochreous shading to smoky fuscous with a thin irregular line of black scales across thorax and a few black scales on forward extremities of patagia. Ground color of forewing brownish ochreous, heavily overlaid and nearly obscured by velvety black scales, especially dense along the costa and interrupted by ill-defined cross marking of metallic blue; and interrupted by ill-defined cross markings of metallic blue; scales; from basal third of costa two narrow, irregular ill-defined streaks of similar scales extending across wing to basal fourth of dorsum; a similar outwardly angulated and even less distinct fascia beyond middle; at tornus and margining the lower half of termen a broader, more distinct patch of metallic blue, somewhat broken by black scales; cilia black, broken by white or whitish ochreous streaks at the extremities of veins 1c, 2, 3, 6, and 7, the last two especially noticeable. Hind wings smoky fuscous, darker at apex and along termen; cilia very pale, almost white, with a dark subbasal band. Outer sides of legs black or blackish fuscous banded by pale ochreous; inner sides of legs, anal tuft and under surface of abdomen pale ochreous. Male genitalia of type figured on Plate I. Alar expanse, 12-13 mm.

Habitat: Rensselaer, N. Y. (N. Y. State collection).

Food Plant: "Loosestrife." Larvæ rolling the terminal leaves.

Type: Cat. No. 22113, U. S. Nat. Mus.

Described from three specimens (2 males and 1 female) submitted by Dr. E. P. Felt under N. Y. S. No. A2726, with request for a name. Male type and female paratype in U. S. National Museum. One male paratype returned to New York State collection.

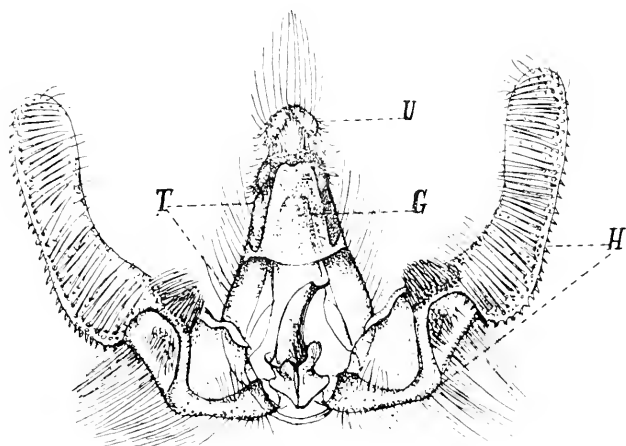
The species is close to and resembles very strikingly *O. cyanana* Murtfeldt. It differs in color of the palpi and thorax and in genitalic characters. In *cyanana* the palpi and thorax are a nearly uniform smoky fuscous without the ochreous scaling of the new species. The male genitalia of the two are strikingly different. *O. approximana* has a prominent, elongate, strongly chitinized *subscapium* (Ss), and a heavily chitinized *gnathos* (G) with a long, spatulate central lip. In *cyanana* the subscapium is indistinguishable and the gnathos, as in most Olethreutidæ, is merely a weakly chitinized band, surrounding the anus and arising from the tegumen well back from the rudimentary uncus (U). In place of the spatulate central tip of *approximana* there is a loose, thin, apron-like flap. The tegumen (T) and harpes (H) of the two species are also differently shaped. (Compare figures on Plate I.)

ON SOME NEW IDOLOTHRIPIDÆ

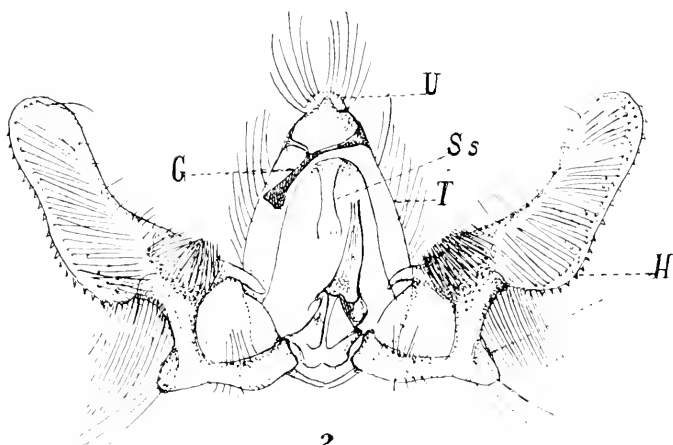
(*Thysanoptera*)

By J. DOUGLAS HOOD

The present paper had its beginning several years ago in what was planned to be a synoptic account of the entire family. The publication by various authors, however, of the principal facts which the writer proposed bringing out, particularly with reference to terminology and synonymy, has left very little, indeed, worthy of presentation except the descriptions which follow. The two new genera and three new species described below are from the Ethiopian and Oriental faunal regions.



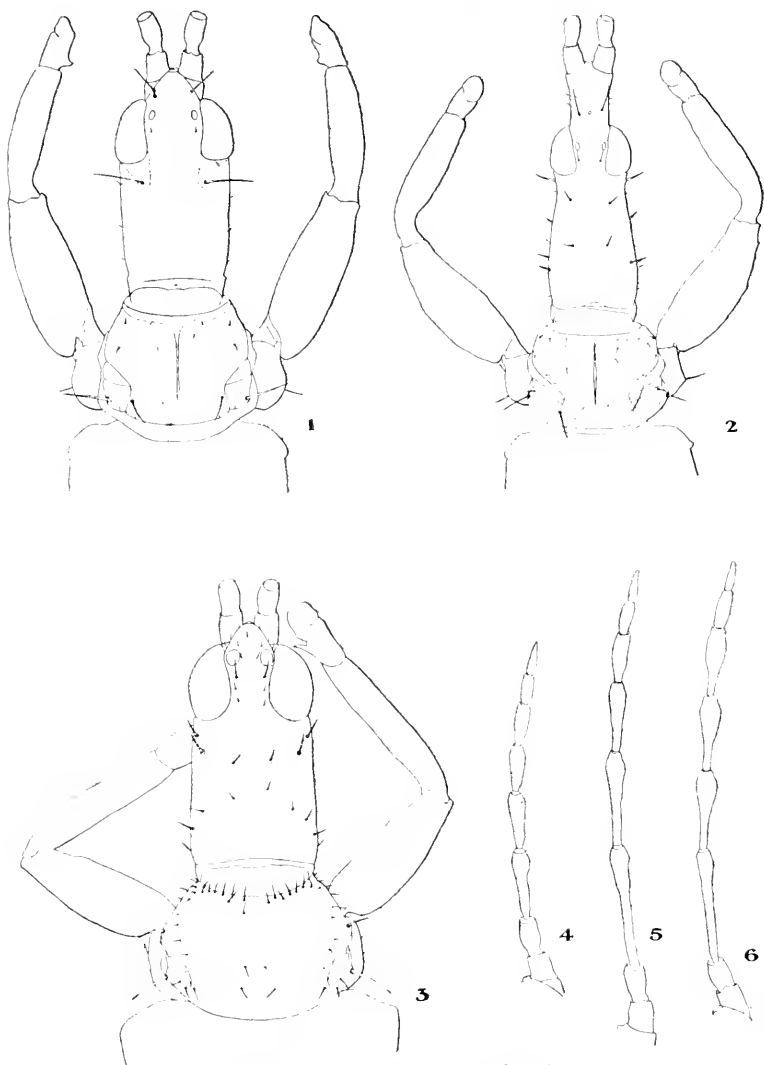
1



2

1. *Olethreutes cyanana* Murtfeldt, male genitalia.

2. *Olethreutes approximana* Heinrich, new species, male genitalia.



(No bristles shown on appendages)

1. *Ophthalmothrips pomeroiyi*, head and prothorax; female, holotype.
(Dotted lines indicate extent of eyes on ventral surface of head.)
2. *Kleothrips atratus*, head and prothorax; female, holotype.
3. *Gigantothrips crazefordi*, head and prothorax; female, paratype.
4. *Ophthalmothrips pomeroiyi*, right antenna; female, holotype.
5. *Kleothrips atratus* right antenna; female, holotype.
6. *Gigantothrips crazefordi*, right antenna; female, holotype.

OPHTHALMOTHRIPS, new genus

Head elongate (in the genotype about twice as long as wide) and somewhat prolonged in front of eyes; vertex conically produced and with the usual pair of prominent bristles near anterior ocellus; eyes prominent, protruding, and on ventral surface of head prolonged posteriorly much beyond posterior dorsal margin (Pl. II, fig. 1); lateral bristles minute; postocular bristles normal; antennæ moderately long and slender. Prothorax with both median line and anterior margin conspicuously thickened. Wings broad, without venation. Fore tarsi armed. Abdomen normal.

Type: *Ophthalmothrips pomeroyi*, new species.

Allied to *Elaphrothrips* and *Dicaiothrips*, but apparently distinct by the ventrally prolonged eyes and the thickened anterior margin of the prothorax.

Ophthalmothrips pomeroyi, new species. (Pl. II, figs. 1 and 4.)

Female (macropterous).—Length, about 2.9 mm. Color black; antennal segments 1, 2, 7, and 8 dark blackish brown, 1 darkest, 2 yellow on outer apical surface; 3–5 yellow, 3 clouded with brown in basal fourth, 4 and 5 clouded at apex, the latter more darkly and broadly; 6 brownish yellow, darker apically; fore tarsi yellow.

Head widest across eyes and about 1.84 times as long as greatest width, converging toward base; vertex conically produced, overhanging base of antennæ; dorsal and lateral surfaces transversely striate and with a few minute bristles; postocular bristles pointed, equal in length to interval between eyes. Eyes about 0.3 as long as head, rather strongly protruding, prolonged on ventral surface of head much beyond posterior dorsal margin (Pl. II, fig. 1). Ocelli almost exactly equidistant, median ocellus situated at apex of produced vertex and overhanging, posterior ocelli opposite a line drawn behind anterior fourth of eyes. Antennæ (Pl. II, fig. 4) nearly 1.6 times as long as head. Mouth cone short, semicircularly rounded at apex.

Prothorax half as long as head and (inclusive of coxæ) twice as wide as median dorsal length; median line and anterior margin conspicuously thickened; the usual two pairs of long bristles at posterior angles pointed; midlateral bristles and the two pairs on anterior margin minute. Pterothorax longer than wide. Wings colorless; fore pair with about 20 accessory hairs on posterior margin. Fore tarsi with a short, stout tooth.

Abdomen slightly wider than pterothorax, subreticulate dorsally with anastomosing lines. Tube 0.9 as long as head and twice as wide at base as at apex, sides nearly straight. Lateral abdominal bristles long, pale, and pointed.

Measurements of holotype (female): Length 2.86 mm.; head, length 0.420 mm., width across eyes 0.228 mm., behind eyes 0.210 mm., near base (least width) 0.182 mm.; eyes, length 0.121 mm., width 0.064 mm., interval 0.100 mm.; postocular bristles, length 0.099 mm.; prothorax, length 0.204 mm., width (inclusive of coxæ) 0.406 mm.; pterothorax, length 0.528 mm., width 0.432 mm.; abdomen, greatest width 0.480 mm.; tube, length 0.384 mm., width at base 0.111 mm., at apex 0.055 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ)	60	78	125	107	89	80	59	64
Width (μ)	43	37	34	35	32	29	24	17
Total length of antenna, 0.662 mm.								

Described from one female taken in flight, near the Rufigi River, East Africa, June 1, 1917, by Lieut. Arthur W. Jobbins-Pomeroy, of the Nigeria Regiment, British Expeditionary Force, after whom the species is named.¹

¹Two years ago, in *Psyche*, Vol. XXIII, p. 11, I allowed myself the privilege of naming in his honor an interesting *Thysanopteron* taken by Lieut. Pomeroy at Ossidinge, Kamerun. Since then his duties in Africa have taken him to many places and each is represented in the collection before me by specimens taken under trying conditions. The dedication of the present species to him is intended as a tribute, in a small way, to his steady endurance of the difficulties and privations of military service and his continued devotion under such circumstances to systematic entomology.

The production of the eyes posteriorly on the ventral surface of the head is apparently a unique character in the Idolothripidæ, and with the thickened anterior margin of the pronotum will serve to distinguish this species from those of the genera *Elaphrothrips* and *Dicaiothrips*. In the Phlæothripidæ eyes of this same type have been noted in *Haplothrips tibialis* and *bellus*, *Cryptothrips dentipes*, *bicolor*, and *gilvipes*, and in *Ommatothrips gossypii*.

Kleothrips atratus, new species. (Pl. II, figs. 2 and 5.)

Female (macropterous).—Length about 4.9 mm. Color coal black, with tarsi and articulations of legs very slightly paler; antennal segments 1, 2, and 6–8 dark blackish brown, 3–5 lemon yellow, 3 narrowly brown at apex, 4 brown in apical third, and 5 brown in apical half; wings clear.

Head three times as long as width across eyes, widest at basal sixth, strongly but gradually narrowed behind eyes and slightly at base, the width behind eyes being 0.76 the greatest subbasal width; produced portion of head about 0.77 as long as the width across eyes, broadest apically, sides parallel and slightly irregular in basal half; dorsal and lateral surfaces of head transversely striate and with three or four pairs of prominent lateral bristles in addition to several smaller ones; postocular bristles minute and widely separated, shorter and weaker than those on cheeks, their bases much closer to eyes than the length of the latter; a second pair of slightly longer and less widely separated bristles about two-fifths the distance from postoculars to base of head; postocellar bristles minute; anteocular bristles about half the length of eye. Eyes prominent, bulging, about 0.21 as long as head, slightly narrower in dorsal aspect than their interval and slightly longer on dorsal surface than on ventral. Ocelli of posterior pair large, situated slightly in front of middle of eyes; anterior ocellus minute and resembling the insertion of a bristle, situated at basal fifth of produced portion of head. Antennæ (Pl. II, fig. 5) about 1.5 times as long as head, length and width of each segment given below under "Measurements;" segment 6 slightly pro-

longed on ventral surface at apex; sense cones short, slender, and pointed.

Prothorax about 0.38 as long as head and (inclusive of coxæ) about 1.88 times as wide as long, surface smooth, without tubercles or tooth-like projections; all usual bristles present, pointed, the two pairs at posterior angles moderately long, others minute and scarcely distinguishable from the several minute bristles scattered about the disk. Wings of equal width throughout, the fore pair with about 32 accessory hairs on posterior margin near apex, and with the outer of the three subbasal bristles long, pointed, and twice the length of the two others, which are blunt. Fore femora slender, unarmed; fore tibiæ and tarsi unarmed.

Abdomen broadest at segment 2, where it is about 1.17 times the width of prothorax, slender and tapering roundly to tube, dorsal surface finely reticulate with anastomosing lines; segment 8 only slightly longer than segment 9 and only 0.39 as long as tube. Tube about 0.79 as long as head and about 4.6 times as long as basal width, which is just twice the apical.

Measurements of holotype (female): Length 4.88 mm.; head, length 0.738 mm., width across eyes 0.241 mm., width in front of eyes 0.114 mm., width behind eyes 0.204 mm., width at base 0.267 mm., length of produced part 0.186 mm.; eyes, length 0.156 mm., width 0.076 mm.; postocular bristles, length 0.024 mm.; prothorax, length 0.281 mm., width (inclusive of coxæ) 0.528 mm.; pterothorax, width 0.576 mm.; abdomen, greatest width 0.616 mm., length of segment 8, 0.228 mm., length of segment 9, 0.216 mm.; tube, length 0.582 mm., width at base 0.126 mm., at apex 0.063 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ)	84	90	288	220	156	114	78	76
Width (μ)	60	50	45	46	42	38	31	20
Total length of antenna, 1.106 mm.								

Described from one female taken by Lieut. A. W. Jobbins-Pomeroy, of the Nigeria Regiment, British Expeditionary Force, on the Rufigi River, East Africa, June 1, 1917. The specimen was flying when collected.

The species may easily be recognized by the black legs.

Gigantothrips crawfordi, new species. (Pl. II, figs. 3 and 6.)

Female (macropterous).—Length about 4.2 mm. Color dark brown; fore tibiæ and all tarsi bright yellow; middle and hind tibiæ brown at base, fading gradually to bright yellow in apical two-thirds; antennal segments 3–6 yellow, darker at apex, segments 7 and 8 yellowish brown.

Head 1.9 times as long as width across eyes, usually very slightly wider near base; cheeks straight, constricted at extreme base; vertex elevated, produced, overhanging the base of the antennæ and bearing the anterior ocellus at its tip; dorsal and lateral surfaces rather deeply striate with anastomosing lines, vertex faintly reticulate; all cephalic bristles short and inconspicuous, postocellars about equal in length to diameter of ocellus; a lateral pair of bristles just behind the eyes subequal to postoculars and to another pair of bristles just behind and mediad to postoculars, all somewhat longer and stronger than postocellars; no prominent anteoculars. Eyes prominent, about one-third as long as head and 1.16 times as wide as their interval. Ocelli equidistant, those of posterior pair opposite anterior third of eyes. Antennæ (Pl. II, fig. 6) twice as long as head, very slender, length and width of each segment given below under "Measurements;" sense cones very long and slender, pointed. Mouth cone normal to the genus.

Prothorax half as long as head and (inclusive of coxæ) about 1.7 times as wide as long, subconcentrically striate around a low broad elevation on each side of the median line; posterior angular bristles stout, blunt, about 0.6 as long as eyes and twice the length of midlaterals, the other usual prothoracic bristles not recognizable as such; anterior margin with a close fringe of about 20 short bristles. Pterothorax normal to genus. Wings long, slightly dilated apically, suffused lightly with brown in apical half and along margins; fore pair with the subbasal bristles minute and posterior margin near apex with about 20 accessory hairs. Legs slender; fore tarsal

tooth moderately long, acute, arising at an angle of about 45 degrees.

Abdomen broadest at base, where it is distinctly narrower than pterothorax, very long and slender, depressed and flattened along lateral margins, tapering uniformly to tube, dorsal surface (except at middle of basal segments) finely reticulate and striate with anastomosing lines; posterior angles of segments 2-7 very slightly produced. Tube bent upward, very long and slender, about 1.87 times as long as head and nine times as long as width at base, which is twice the width at apex; surface sparsely clothed with rather long slender bristles. Bristles at posterior angles of segments 1-8 averaging about equal in length to the longest prothoracic pair, colorless; those on segment 9 slightly shorter than terminal bristles, the latter 0.3 as long as tube, yellowish brown; segments 2-5 each with four or five pairs of sigmoid, wing-retaining bristles and numerous minute straight bristles, situated close to lateral margins of segments; segments 6-8 without sigmoid bristles but with minute lateral bristles and, in addition, with two longitudinal rows of small bristles along middle of dorsal surface.

Measurements of holotype (female): Length 4.15 mm.; head, length 0.438 mm., width across eyes 0.232 mm., width behind eyes 0.210 mm., width near base 0.236 mm., width at extreme base 0.222 mm.; eyes, length 0.140 mm., width 0.083 mm., interval 0.068 mm.; prothorax, length 0.223 mm., width (inclusive of coxæ) 0.388 mm.; pterothorax, length 0.420 mm., width 0.504 mm.; abdomen, greatest width 0.432 mm., length of segment 8, 0.312 mm., length of segment 9, 0.240 mm.; tube, length 0.816 mm., width at base 0.090 mm., at apex 0.045 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ)	65	63	207	147	141	130	74	57
Width (μ)	48	39	31	39	41	37	27	15

Total length of antenna, 0.884 mm.

Male (macropterous).—Length about 3.6 mm. Similar to female in color and structure except as follows:

Eyes about 1.24 times as wide as their interval. Fore wings with about 18 accessory hairs on posterior margin.

Tube 1.6 times as long as head and nine times as long as width at base, which is 1.8 times the width at apex.

Measurements of allotype (male): Length 3.53 mm.; head, length 0.384 mm., width across eyes 0.210 mm., width behind eyes 0.197 mm., width near base 0.210 mm., width at extreme base 0.192 mm.; eyes, length 0.126 mm., width 0.074 mm., interval 0.060 mm.; prothorax, length 0.180 mm., width (inclusive of coxæ) 0.330 mm.; pterothorax, length 0.348 mm., width 0.408 mm.; abdomen, greatest width 0.336 mm., length of segment 8, 0.288 mm., length of segment 9, 0.192 mm., tube, length 0.607 mm., width at base 0.076 mm., at apex 0.042 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ)	57	51	150	124	121	114	69	54
Width (μ)	40	40	29	36	34	33	24	15

Total length of antenna, 0.740 mm.

Described from four individuals of each sex taken by Prof. C. F. Baker at Los Banos, Philippine Islands. The specimens were transmitted for determination by Prof. D. L. Crawford, after whom the species is named in recognition of his work on the Thysanoptera of California and Mexico.

CERCOTHRIPS, new genus

Head elongate, more than twice as long as wide, not prolonged in front of eyes, lateral bristles not prominent; vertex not at all produced in front of eyes, without the usual pair of prominent bristles near anterior ocellus; postocular bristles short and sublateral in position; antennæ long and very slender. Wings broad, the fore pair with subbasal bristles minute; hind pair with distinct median vein extending almost to tip. Legs slender, fore tarsi weakly armed in male, unarmed in female. Abdomen long, slender, and flattened; posterior angles of intermediate segments prolonged in both sexes (conspicuously in the male, slightly in the female) and tipped with a stout spine.

Type: *Acanthinothrips nigrodentatus* Karny.

The characters given above separate this genus readily from all others in the family. Instead of being allied to *Acanthi-*

nothrips (a synonym of *Idolothrips*), in which it was originally described, it is really very close to *Gigantothrips* Zimmerman, and is separable from that genus by the simple vertex, the venation of the hind wing, and the flattened abdomen of the male with its conspicuously prolonged intermediate segments. Only one species is known; it inhabits galls on *Planchonia valida* in Java.

SOME NEW TROPICAL AMERICAN MOTHS

(*Lepidoptera*)

By HARRISON G. DYAR

NOCTUIDÆ

AGROTINÆ

Agrotis timbor, new species.

Palpi black, the tip of second joint and all of third brownish ocher; head and basal half of collar brownish ocher, a dark line on upper part of front; a yellow line through middle of collar, the tip black. Thorax and fore wing smooth blackish brown, the stigmata a little more of a leaden tint; cell filled in with black; costa broadly brownish ocher to end of cell; lines faint, nearly illegible, blackish, single, the inner outwardly oblique, the outer running just beyond reniform; subterminal line represented by a trace of grayish scales. Hind wing pale grayish, costa broadly brown, veins brown; a rounded brown discal mark on upper half of the cross-vein; fringe tinged with salmon-color. Legs entirely blackish. Expanse, 40 mm.

Type, female, No. 22009, U. S. Nat. Mus.; Zacualpan, Mexico, June, 1918 (R. Müller).

Agrotis hahama, new species.

Ocher, irrorated and shaded with brownish, of the color of *A. perotensis* Schaus, which this much resembles, except that the markings are reversed. Lines light, the inner nearly straight, the outer roundly angled at vein \hat{r} ; a dark shade

in and beyond cell between the stigmata, which are large, full, of the pale ground color, weakly defined on the sides by lighter lines; a row of dark dots on the veins before outer line. Subterminal line pale, a little wavy, preceded by a dark shade on costal portion; small terminal dots between the veins. Hind wing whitish on the disk, shaded with pink, especially along anal area and fringe; costa ocherous, veins dark, traces of an ocherous brownish discal mark. Expanse, 45 mm.

Type, male, No. 22010, U. S. Nat. Mus.; Zacualpan, Mexico, May, 1918 (R. Müller).

Lycophotia federalis, new species.

Thorax and fore wing gray, sparsely sprinkled with black scales, the fore wing light gray with rusty yellow stains about the stigmata; a black speck on costa near base; inner line black, biarcuate, broken and diluted except on costa and claviform; orbicular elongate, slenderly outlined in black; reniform constricted, heavily stained with black below and on outer edge; outer line single, black, slightly and bluntly denticulate, strongly excurved between subcostal and vein 2; a terminal black shade, preceded by a brown spot discally; terminal line pale, spotted on the veins; fringe blackish. Hind wing heavily black shaded, the veins darker; fringe whitish. Expanse, 31 mm.

Type, female, No. 22120, U. S. Nat. Mus.; Mexico City, Mexico, October, 1918 (R. Müller).

HADENINÆ

Cirphis cholica, new species.

Fore wing grayish over luteous, the veins outwardly pale-lined, forming dashes in the gray fringe; inner line lost; a gray shade along median vein; at base of veins 2-4 a small yellowish spot with black speck in its center; outer line curved, composed of dark spots on the veins, more or less confluent. Hind wing whitish, veins, costa, and narrow terminal line gray-shaded. Expanse, 32 mm.

Type, male, No. 22011, U. S. Nat. Mus.; Zacualpan, Mexico, May, 1918 (R. Müller).

Similar to *C. microsticha* Hampson, but the anal tuft of the male is very slight, hardly present.

Eriopyga nocanoca, new species.

Gray-brown; a triangular black patch near base below cell, above which are two small spots; orbicular and reniform filled in with black, confluent below; lines obscure, pale, the outer minutely denticulate; a dark median shade-line from reniform to inner margin; subterminal line pale, straight and parallel to outer margin; a small black spot subapically. Hind wing brownish gray, dark, a little lighter and yellowish toward base. Expanse, 24 mm. Antennæ of male ciliate; legs normal; thorax without tufts of scales on pectus; abdomen with claspers and anal tuft long; fore wing below with cell and area below it with downturned hair.

Type, male, No. 22121, U. S. Nat. Mus.; Zacualpan, Mexico, September, 1918 (R. Müller).

CUCULLINÆ

Cucullia eucaena, new species.

Thorax gray, the dorsal area blackish. Fore wing gray, shaded with black except terminally, costal area in and beyond cell and area at anal angle shaded with reddish brown; stigmata rounded, not enlarged, dull luteous filled, without defined edges except a curved black line below the reniform; a group of black and brown dots in the reniform and one of each color in the orbicular; inner line black, angular, running out in a closed point on submedian fold; veins outwardly black-lined; subterminal line obsolete above, visible below vein 3, whitish, bent inward on submedian, angled on vein 1 and running to inner margin near middle; a black bar from end of vein 2 to outer line at submedian. Hind wing whitish over the disk, veins and terminal area very broadly blackish; fringe white. Expanse, 49 mm.

Type, female, No. 22012, U. S. Nat. Mus.; Mexico City, Mexico, June, 1918 (R. Müller).

Cucullia syggnomon, new species.

Fore wing purplish gray, rather dark; whitish oblique streaks along the costa; inner line black, produced outward on submedian fold, the ends of the point widely open; a rufous shading in end of cell and beyond on inner margin at base and above the black streak at vein 2; stigmata enlarged, dull rufous filled, edged on the sides with black dots, the reniform with a curved black line below; two blackish dots in upper half of reniform; outer line whitish, continuous, oblique at costa, angled at vein 7, and again at vein 4, incurved a little at submedian fold and angled at vein 1; veins outwardly black-lined; a terminal black line, cut at the veins. Hind wing brownish on the disk, the veins, costa, and outer margin very broadly blackish; fringe brown at base, white outwardly. Expanse, 53 mm.

Type, female, No. 22013, U. S. Nat. Mus.; Orizaba, Mexico, November, 1908 (R. Müller).

Cucullia eccissica, new species.

Smooth dark gray, lines and stigmata obsolete; veins 3, 4, 6, 7, and 8 black-lined terminally; a black line below median vein from 2 to base of 4; a long black line from base along submedian to outer fifth, where it leaves the fold and runs obliquely to end of vein 2; faint blackish lines below, forming outlines of the angle of inner line open at the tip and outer line, angled on submedian and vein 1. Hind wing white, the veins dark, the termen narrowly dark gray above. Expanse, 40 mm.

Type, male, No. 22014, U. S. Nat. Mus.; Tehuacan, Mexico, June, 1913 (R. Müller).

Cucullia edificans, new species.

Fore wing light gray, shaded faintly with rufous in end of cell and beyond, giving a darker tone to the costal area; inner line angled outward on submedian fold and below vein 1, the ends of the upper angle open; stigmata absent; three black dots along discal fold in cell; two blackish shades on the costa,

the apex blackish; outer line rather distinct, whitish, oblique on costa, angled at veins 7 and 4, submedian and vein 1; a black dash from end of vein 2 to outer line, then preceding it along submedian; the line is distinct below this and edged with black; veins outwardly black-lined. Hind wing pale gray; veins dark; outer area broadly blackish brown; fringe whitish, interlined. Expanse, 46 mm.

Type, male, No. 22015, U. S. Nat. Mus.; Cachi, Costa Rica, October 27, 1909 (W. Schaus).

The specimen looks much like *C. costaricensis* Hampson, except that the outlines of the stigmata are absent.

Amathes miastigma, new species.

Fore wing straw-color, suffused with pinkish; a round black spot in lower part of reniform; markings otherwise faint and not contrasted; lines dark, the inner coarsely waved; stigmata outlined in dark; a median shaded line from reniform to inner margin; outer line slightly excurved between veins 2 and 7; subterminal line irregularly wavy, pale, with blackish spottings between the veins, that at vein 6 the most distinct. Hind wing whitish, gray-shaded outwardly and on veins. Expanse, 30 mm.

Type, female, No. 22016, U. S. Nat. Mus.; Zacualpan, Mexico, March, 1918 (R. Müller).

ACRONYCTINÆ

Cropia maudaea, new species.

Very similar to *C. ruthaea* Dyar. The pectinations of the male antennæ are shorter and disappear within 20 joints of the end instead of 15 joints. The coloration is darker and more suffused, the fore wing being nearly solidly dark instead of having large open spaces basally and subterminally; the black dashes at veins 5 and 6 are shorter and less distinct. The hind wings are more uniformly dark. Expanse, 33 mm.

Type, male, No. 22017, U. S. Nat. Mus.; Zacualpan, Mexico, July, 1918 (R. Müller).

Cropia impressionata, new species.

Fore wing blackish brown, basal and subterminal spaces rufous shaded; stigmata large, the reniform with a broad inner leaden ring; lines black, a bar between them on submedian; a thick black dash at base; inner line angled on submedian and below vein 1, black, with a faint outer duplication; outer line black, angled a little at vein 4, edged by a linear white line below, indented at vein 1, along which there are some white scales; a black dash terminally above veins 5 and 6; terminal area blackish, widened at costa, vein 6 and tornus. Hind wing brownish, with an outer wavy dark line; a broken blackish terminal line. Expanse, 35 mm.

Type, male, No. 22018, U. S. Nat. Mus.; Zacualpan, Mexico, June, 1918 (R. Müller).

In general similar to *C. aleuca* Hampson, but the antennæ are pectinated on the basal two-thirds, being crenulate only in male *aleuca*.

Acronycta polyporia, new species.

Fore wing dark gray, suffused with rufous in end of cell and beyond nearly to termen; base broadly black-shaded; a long black bar from base through lower part of cell to termen, duplicated by two short dashes above close to margin; lines faint; inner and median appear as angular black marks; outer more distinct, running in along costa and excurved over cell; fringe black, cut by a basal white line and dashes. Hind wing white, irrorate with blackish at apex and narrowly along margin; a faint discal mark. Expanse, 27 mm.

Type, male, No. 22019, U. S. Nat. Mus.; Zacualpan, Mexico, May, 1918 (R. Müller).

Ogdoconta justitia, new species.

Purplish gray with bronzy reflection, irrorated with white; lines white, pulverulent; inner line denticulate, excurved, touching orbicular, which is outlined in powdery white; reniform similar, large, produced inward on its lower corner; outer line angled slightly at veins 2 and 4, followed by a nar-

row dark line; subterminal line irregular, close to margin; terminal line whitish, festooned. Hind wing brown-gray, the costa grayer; terminal line dark; fringe whitish. Expanse, 20 mm.

Type, female, No. 22122, U. S. Nat. Mus.; Zacualpan, Mexico, September, 1913 (R. Müller).

Near *O. pulvilinea* Schaus, but much larger and grayer.

***Chamaeclea mapensa*, new species.**

Head orange, thorax olive-yellow; fore wing olive-yellow at base and terminally, median area shaded with pink; lines obscure, olive-brown, conjoined through median area along submedian fold; subterminal line similar, with an olive-brown dash on discal fold and a spot above tornus; fringe whitish. Hind wing ocherous at base, shading to dark brown outwardly; fringe whitish. Expanse, 21 mm.

Type, male, No. 22123, U. S. Nat. Mus.; Panuco, Mexico, September, 1918 (R. Müller).

***Xylostola novi-mundi*, new species.**

Fore wing brown with a pinkish tint, the reniform large and paler reddish, but without any defining edge outwardly, a blackish mark within; a slight blackish mark for orbicular; lines very indistinct, marked by irregular blackish scales; outer line the best defined, slender, blackish, denticulate on the veins, followed by a narrow lighter shade, excurved above and notched a little on submedian fold; subterminal line obsolete, but preceded by a faint blackish macular shading; fringe blackish. Hind wing broadly blackish, the fringe pale with blackish checkering; a broken black terminal line, followed by ocherous. Expanse, 27 mm.

Type, female, No. 22130, U. S. Nat. Mus.; Portovelo, Ecuador, December 31, 1915 (F. W. Rohwer).

ERASTRIINÆ

***Eublemma irresoluta*, new species.**

Fore wing yellowish, shaded with pale reddish, the costal area faintly paler; lines yellowish, single; inner and median

straight and parallel, the median incurved near costa; a shaded gray discal mark; outer line a little irregular, roundedly incurved at costa; subterminal line wavy, with blackish spottings. Hind wing whitish, tinged with yellowish, especially outwardly. Expanse, 21 mm.

Type, female, No. 22020, U. S. Nat. Mus.; Orizaba, Mexico, June, 1912 (R. Müller).

Similar to *laphyra* Druce, but paler and twice the size.

Eublemma carterotata, new species.

Fore wing yellow along costa, the inner area purple and violaceous; inner line a faint trace; outer line whitish, oblique, incurved at costa; terminal space fiery red, crossed by a purple subterminal shaded line. Hind wing yellowish, shaded with dull pink outwardly. Expanse, 20 mm.

Type, female, No. 22021, U. S. Nat. Mus.; Sixola River, Costa Rica, September, 1909 (W. Schaus).

Cobubatha nubidice, new species.

Body parts black, the metathoracic tufts red-brown; abdominal tuft at base and on third segment black; fore wing black, a little bronzy and leaden, the lines very obscure, pale, crenulate; orbicular and reniform black, with pale outlines; a whitish mark at tornus and an obscure black wedge on margin opposite cell; terminal line black. Hind wing black. Expanse, 13 mm.

Type, female, No. 22124, U. S. Nat. Mus.; Guadalupe, Mexico, July, 1918 (R. Müller).

HYPENINÆ

Prothymia heostrophis, new species.

Thorax and fore wing yellow; palpi, vertex, and collar pink; fore wing with the costa broadly pink to an outer straight, oblique band; termen broadly pink, straightly limited within, cut by faint traces of a brown dotted subterminal line. Hind wing straw-whitish, the termen stained with brown; a pink spot at anal angle. Expanse, 17 mm.

Type, female, No. 22125, U. S. Nat. Mus.; Zacualpan, Mexico, September, 1918 (R. Müller).

Mystomemia hortealis, new genus and species.

Fore wing with single areole, veins 8-10 stalked from it; male palpi with the first joint upcurved, then sharply reflexed, reaching back to end of thorax; antennæ with long bristles from short serrations; a long area with hair-like scales at about the outer third, but no defined tuft.

Fore wing dark brown, the terminal area violaceous gray, contrasting; orbicular and reniform white points in black clouds with diffused edges; lines obscure, whitish, wavy, the outer excurved over cell; a nearly straight whitish subterminal line bounding the terminal space; a black crenulate terminal line. Hind wing blackish gray, darker outwardly; a terminal line as on fore wing. Expanse, 39 mm.

Type, male, No. 22022, U. S. Nat. Mus.; Zacualpan, Mexico, June, 1918 (R. Müller).

NOTODONTIDÆ

Dicentria phthimena, new species.

Very close to *D. moribunda* Dyar, from the same locality. The fore wings seem narrower; the pale area below the cell is not sharply limited below, but extends across the median vein; the pale terminal streak above vein 2 is linear and more oblique; the hind wings are whitish only mesially, the apex and inner area being broadly shaded with grayish and brown. Expanse, 38 mm.

Type, male, No. 22023, U. S. Nat. Mus.; Zacualpan, Mexico, July, 1918 (R. Müller).

GEOMETRIDÆ

Molybdogompha polymygmata, new species.

Wings olive-gray, finely and densely striated with raised pale scales subterminally on fore wing and over most of the medial area of hind wing; fore wing diluted with reddish patches basally and two illy defined yellow patches on costa;

a row of black spots with raised metallic scales between the veins subterminally on both wings, followed by a broken metallic line close to the margin; fringes dark gray. Expanse, 17 mm.

Type, female, No. 22126, U. S. Nat. Mus.; Panuco, Mexico, September, 1918 (R. Müller).

Cymatophora evelis, new species.

Fore wing smooth violaceous gray; inner line lost; outer line blackish, nearly straight, bent only on median vein; discal dot a trace; subterminal line obsolete, but marked by two black wedges below costa; space between outer and subterminal lines darker gray. Hind wing yellowish gray, immaculate. Expanse, 23 mm.

Type, male, No. 22127, U. S. Nat. Mus.; Pachuca, Mexico, September, 1918 (R. Müller).

Lychnosea aganaedoea, new species.

Wings whitish, irrorated with pale brownish gray; fore wing with a discal dot and outer line, straight in course, wavy, parallel to the outer margin; hind wing with a discal dot which is more distinct on the under side. Expanse, 32 mm.

Type, male, No. 22128, U. S. Nat. Mus.; Mexico, without precise locality. A second male with the fore wing more densely irrorated and the outer line with an inner brown edge, Cuajimalpa, Mexico, October, 1918 (R. Müller).

THYRIDIDÆ

Dysodia acrotoma, new species.

Reddish, the wings strigose with blackish rather openly; fore wing without discal dot, hind wing with two very small, separated, punctiform hyaline ones; outer line on fore wing oblique, narrow, triangularly widening on costal third; a straight line across the apex from costa to vein 4. Hind wing with a faint shade through the middle and a line from discal dot to inner margin; outer reticulations distinct, broadly open. Expanse, 28 mm.

Type, male, No. 22024, U. S. Nat. Mus.; Zacualpan, Mexico, August, 1918 (R. Müller).

This runs to *innubila* Warren in the table (Ins. Ins. Mens., i, 37, 1913), described from Bolivia and Peru and known to me only by description. I do not think it will prove the same as the present species.

PYRALIDÆ

PHYCITINÆ

✓ **Rampylla orio**, new genus and species.

9 Hind wing with 8 veins, vein 2 arising before the end of the cell; fore wing with veins 3-5 from lower angle of cell, 7-8 stalked, 10 from the cell; labial palpi upturned to vertex, the second joint widened with scales at tip; maxillary palpi with flattened scales pressed against the front; antennæ simple, thickened and somewhat angular, annulate; fore wing without scale ridge.

Fore wing dark violaceous gray; inner line lost, indicated by a few black scales; discal dots small, pale yellowish; similar marks at the bases of the discal venules, relieving them, the veins themselves, 2-6 slightly darkened; outer line distinct, black, followed by brown, a little indented opposite cell; a narrow black terminal line, followed by a pale line in base of fringe. Hind wing yellowish translucent, a little grayish tinted, the tufts yellowish, consisting of curled hairs on the under side at origin of veins 2-5, running out as a fringe along these veins and the bases of 6-7 also; the anal area forms a pocket containing a long yellow hair-pencil. Expanse, 21 mm.

Type, male, No. 22025, U. S. Nat. Mus.; Zacualpan, Mexico, March, 1918 (R. Müller).

✓ In this genus will also fall *Ulophora subsutella* Schaus (Ann. Mag. Nat. Hist., (8), xi, 248, 1913) and *Salebria polydectella* Schaus (Ann. Mag. Nat. Hist., (8), xi, 250, 1913), probably so in the case of the latter, the type of which is a female.

***Dioryctria muellerana*, new species.**

Fore wing dark gray, a little shaded with reddish in lower part of median space and subterminally; a slight black mark near base, then a subbasal black band, distinct centrally; inner line narrow, indented on median and vein 1; discal mark pale, with a little blackish outwardly; outer line rather broad and streaked on the veins, indented opposite cell and a little indented below, followed very faintly by whitish; veins in terminal area blackish lined; a terminal black line. Hind wing grayish translucent, darker on costa and termen. Expanse, 30 mm.

Type, male, No. 22026, U. S. Nat. Mus.; Zacualpan, Mexico, May, 1918 (R. Müller).

This may prove to be the male of *D. majorella* Dyar.

CRAMBINÆ

***Thaumatopsis idion*, new species.**

Fore wing brownish gray, a broad white streak through lower part of cell running out nearly to termen; a blackish shade above this in upper part of cell; narrow black lines outwardly in the interspaces; an ochraceous shading along submedian fold. Hind wing gray. Expanse, 30 mm.

Type, male, No. 22129, U. S. Nat. Mus.; Mexico City, Mexico, July, 1918 (R. Müller).

A NOTE ON ARGENTINE MOSQUITOES

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

According to recent publications, the following mosquitoes are known to occur in the Argentine Republic:

?*Sabethes cyaneus* Fabricius.

Limatus leontiniae Brèthes.

Lesticocampa paranensis Brèthes.

**Culex* (*Culex*) *pipiens* Linn. (*flavipes* Macquart).

?*Culex* (*Culex*) *quinqüefasciatus* Say (*dolosa* of authors, not of Lynch).

**Culex* (*Culex*) *bonariensis* Brèthes.

Culex (*Choeroporpa*) *intrincatus* Brèthes.

Mansonia (*Mansonia*) *titillans* Walker (*taeniorhynchus* Lynch, not of Wiedemann).

Mansonia (*Coquillettidia*) *fasciolatus* Lynch.

Psorophora (*Psorophora*) *tibialis* Rob.-Desv. (*lynchi* Brèthes).

Psorophora (*Psorophora*) *holmbergi* Lynch.

Psorophora (*Janthinosoma*) *discrucians* Walker.

**Psorophora* (*Janthinosoma*) *posticatus* Wied. (*centrale* Brèthes).

**Psorophora* (*Janthinosoma*) *oblita* Lynch.

Psorophora (*Janthinosoma*) *confinis* Lynch.

Aedes (*Ochlerotatus*) *scapularis* Rondani (*confirmatus* Lynch).

**Aedes* (*Ochlerotatus*) *albifasciatus* Macquart.

**Aedes* (*Ochlerotatus*) *lynchii* Brèthes.

**Aedes* (*Stegomyia*) *argenteus* Poiret.

Haemagogus *spgazzinii* Brèthes.

Megarhinus *lynchii* Dyar & Knab.

Megarhinus *haemorrhoidalis* Rob.-Desv.

Uranotaenia *nataliae* Lynch.

Uranotaenia *pulcherrima* Lynch.

Uranotaenia *geometrica* Theobald.

Anopheles *annulipalpis* Lynch.

Anopheles *pictipennis* Phil. (*albitarsis* Lynch).

Anopheles *pseudopunctipennis* Theobald (*argentinus* Brèthes).

Anopheles *argyritarsis* Rob.-Desv.

Señor Juan Brèthes, whose name occurs as the author of many Argentine species, has been good enough to send me the species marked above with an asterisk, on some of which I comment.

***Culex pipiens* Linn.**

The reference of *flavipes* to *pipiens* originally made by Brèthes in 1912 and confirmed by me from figures in 1918, is easily established by the specimens. The genitalia agree entirely.

***Culex bonariensis* Brèthes.**

A distinct species of true *Culex*, coming in the *salinarius* group.

***Culex brethesi*, new species.**

As noted below, Brèthes's *Culex lynchii* is an *Aedes*, being

founded upon females. Later he describes what purports to be the male of it; but the specimens have evidently been wrongly associated, for the male is a *Culex*, different from any of the species listed and apparently close to the North American *Culex restuans* Theobald. The new name is accordingly proposed, founded upon Brèthes's figure of the genitalia (Anal. Mus. Nac. Hist. Nat. de Buenos Aires, xxviii, 214, fig. 6, 1916).

***Aëdes lynchii* Brèthes.**

Culex lynchii Brèthes, Bol. Inst. Ent. y Pat. Veg., i, 30, 1912.

The females belong to *Aëdes*, of the tropical group of *Ochlerotatus* typified by *scapularis* Rond. The male is unknown.

In the monograph,¹ we show that *Heteronycha dolosa* Lynch Arribálzaga is an *Aëdes*, but were not able to indicate the identity of the species. It appears to have been not uncommon, and should certainly recur. It seems to me that *lynchii* Brèthes is probably the species in question. This is a medium-sized *Aëdes* with black tarsi, the mesonotum with a broad central band of light golden scales, the sides broadly scaled with dark brown. The abdomen is unbanded above, with small lateral basal segmental white spots, the venter whitish scaled, with apical black bands posteriorly and a slender black broken median line. Lynch's description is anything but clear. He emphasizes the male structures and scarcely describes the coloration at all. The impression one gets is that he is describing a male *Culex*, and this accounts for the reference of *Heteronycha dolosa* to the synonymy of *Culex quinquefasciatus* Say made by many authors. However, his female clearly had toothed claws. He separates *Culex* and *Heteronycha* on the basis of the former having simple claws in both sexes, the latter with toothed claws in both sexes. Now the males have toothed claws in both *Culex* and *Aëdes*, so it is clear that Lynch made an error. What he had before him as the male of *Culex* cannot now be said; but it strikes me as

¹ Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 614, 1917.

probable that his male of *Heteronycha* was a male *Culex*, the female being an *Aedes*, the two wrongly associated, just as Brèthes has subsequently done in the case of the same species. Still, the only tangible differentiation between *Culex* and *Heteronycha* is the toothed claws in the latter, and therefore *Heteronycha* must be considered to be founded on the *Aedes* element before Lynch. That this was the present species, *lynchii* Brèthes, seems to me probable by exclusion. All the other common *Aedes* are specified by Lynch; this one is omitted. It is an abundant species, as the numerous females before me testify. Males in this group are not commonly taken unless bred, and one has to be fortunate to breed them, for they pass through their transformations with surprising rapidity in transient rain-puddles. Nevertheless the females are common and conspicuous and the temptation is not always resisted by students to associate with these common females before them some males which they find likewise rather common. With rubbed specimens the markings will not seem dissimilar. This is what I think has occurred in the case of Lynch. It certainly did in the case of Brèthes. If I am right, the following synonymy will obtain and the name *Heteronycha* will replace *Ochlerotatus* as a subgenus of *Aedes*:

AEDES (HETERONYCHA) DOLOSA Lynch Arribáizaga.

Heteronycha dolosa Lynch (in part, female only), Rev. Mus. de La Plata, ii, 156, 1891.

Culex lynchii Brèthes, An. Mus. Nac. Hist. Nat. B. A., xxviii, 212, 1916 (female; not *Culex lynchii* Brèthes, male, cited above).

Aedes albifasciatus Macquart.

Señor Brèthes sends males, so that I am able to make known the genitalia of this interesting species.

Male genitalia. Side pieces about three times as long as wide, the tips conical; apical lobe undifferentiated, probably represented by a nude outer area; basal lobe large, prominent, subglobose, covered with fine but rather long hairs; a group of many stout setæ at the base, the innermost of which is the

stoutest, but does not form a differentiated spine. Harpagones with the base widened and pilose, the shaft long, bent, with a seta just before the end; filament shortly sickle-shaped, roundly expanded on the inner side, not angled. Harpes normal. Basal appendages short, with four or five stout setæ.

Psorophora (Janthinosoma) oblita Lynch Arribálzaga.

This species was described from a damaged male. A single female sent by Señor Brèthes, captured by M. S. Pennington at Quilmes, Province of Buenos Aires, Argentina, April 11, 1918, seems to correspond.

Mesonotum with small blackish scales, sparsely intermixed with ovate pale yellow ones, giving the frosted appearance described by the author; abdomen metallic blue-black above, without bands, lateral yellow spots, widened posteriorly; venter mostly black, the anterior parts of segments yellow, more so toward base; legs with bronzy black scales which take a blue reflection on tibiæ, hind tibiæ and tarsi with outstanding scales about as long as the setæ, the tip of the third hind tarsal white, fourth and fifth missing. This differs in no way from *P. centrale* Brèthes = *posticatus* Wied. In good specimens before me, the frosty appearance of the mesonotum is lacking. I think the following synonymy will obtain:

PSOROPHORA (JANTHINOSOMA) POSTICATUS Wiedemann.

Culex posticatus Wiedemann, Dipt. Exot., i, 43, 1821.

Janthinosoma ? oblita Lynch, Rev. Mus. de La Plata, ii, 154, 1891.

Janthinosoma echinata Grabham, Can. Ent., xxxviii, 311, 1906.

Janthinosoma coquilletti Theobald, Mon. Culic., iv, 153, 1907.

Janthinosoma jamaicensis Theobald, Mon. Culic., iv, 157, 1907.

Janthinosoma centrale Brèthes, Bol. Inst. Ent. y Pat. Veg., i, 20, 1912.

ON SOME NEW THYSANOPTERA FROM SOUTHERN INDIA

By J. DOUGLAS HOOD

The material described below was transmitted for determination by T. V. Ramakrishna Aiyar, Government Entomologist, and was collected at Coimbatore, Southern India. I have taken pleasure in naming one of the more interesting species in his honor.

Scirtothrips dorsalis, new species.

Female (macropterous).—Length about 0.9 mm. Color straw yellow, sides of thorax slightly darker; abdominal segments 3–8 each with a basal transverse dark line in the median fourth followed posteriorly by a light brown blotch; segment 2 of antenna about concolorous with body, segment 1 paler, 3–8 gray-brown, 3–5 paler basally, 4 and 5 each with a narrow dark ring at base; fore wings nearly uniform gray, hind wings pale, with dark median line.

Head about 1.77 times as wide as long and about 0.7 as long as prothorax; cheeks nearly straight, slightly converging posteriorly; frontal costa nearly 0.9 as wide as basal antennal segment. Eyes slightly protruding, fully three times as long as their distance from posterior margin of head, 0.7 as wide as their interval, setose. Ocelli approximate, opposite center of eyes, pigment bright red. Antennæ three times as long as head, normal to the genus.

Prothorax about 1.5 times as wide as long; pronotum with minute, close, transverse striæ visible only under high magnification, and a few scattered dark bristles, the pair at the posterior angles short, stout, and dark, equal in length to segment 2 of antenna. Pterothorax about 1.3 times as wide as prothorax. Wings of fore pair about eleven times as long as greatest subbasal width exclusive of scale, 2.65 times as long as antennæ, and nearly 4.5 times as long as width of head; anterior vein with a group of three dark bristles in basal fourth, a second group of three in second fourth, one bristle at

middle, and two more near tip; posterior vein with two or three bristles in apical half.

Abdomen with last segment blunt, nearly as wide as long, not divided above; bristles light brown, normal to the genus.

Measurements of holotype (female): Length 0.876 mm.; head, length 0.075 mm., width 0.133 mm.; eyes, length 0.054 mm., width 0.039 mm.; prothorax, length 0.108 mm., width 0.158 mm.; pterothorax, length 0.204 mm., width 0.208 mm.; abdomen, width 0.240 mm.; fore wings, length 0.594 mm., width at middle 0.034 mm., near base 0.053 mm.

Antennal segments: 1 2 3 4 5 6 7 8

Length (μ)..... 19 34 40 37 37 38 7 12

Width (μ)..... 21 24 18 18 15 15 7 5

Total length of antenna, 0.224 mm.

Described from 34 females taken by T. V. Ramakrishna Aiyar on castor and chillies shoots, at Coimbatore, India, March 13 and 14, 1916.

Readily known by the abdominal coloration.

PERISSOTHRIPS, new genus

Body almost free from sculpture. Head short, broad, and exceedingly small, nearly twice as wide as long. Antennæ eight-segmented, the second segment large and subequal in length to third and sixth; segments 3 and 4 with forked sense cones. Mouth cone very long and slender, about twice the length of head and surpassing base of prosternum; maxillary palpi three-segmented, basal segment longest, middle segment shortest. Prothorax long, about three times the length of head, slightly widened behind; posterior angles with one pair of outstanding short bristles. Legs short and stout; fore tibiae of male slightly prolonged at apex within and with a minute acute tooth, that of female angulate and with a small bristle arising from the apex of the angle. Wings slender, weakly fringed, fore pair with two indistinct longitudinal veins. Abdomen of female sharply conical at tip, the last three segments long and more heavily chitinized; male with

the posterior margins of segments 4–8 prolonged into a series of oblique, postero-laterally-directed acute teeth.

Type: *Perissothrips parviceps*, new species.

The unusual features of the single species for which this genus is erected are the small size and extreme shortness of the head, the great length of the mouth-cone, the armed fore tibia, and, in the male, the armature of the intermediate abdominal segments. The first two characters and the acutely pointed abdomen ally it closely with the North American *Chilothrips*, with which, however, it can not be confused.

***Perissothrips parviceps*, new species.** (Pl. III, figs. 3–6.)

Female (macropterous).—Length about 0.9 mm. Color uniform straw yellow; antennæ with segment 4 gray in apical half and segments 6–8 dark brown, 5 sometimes grayish at tip; wings lightly clouded with yellowish.

Head nearly twice as wide as median dorsal length, broadest basally, cheeks nearly straight, slightly diverging behind; occiput with two or three faint anastomosing lines; interocellar and anteocular bristles small and inconspicuous. Eyes very minutely setose, about three times as long as their distance from posterior margin of head, and wider than their interval. Ocelli equal in size, the posterior pair slightly more widely separated than their distance from anterior ocellus; pigment bright red. Antennæ (Pl. III, fig. 3) about 3.7 times as long as head.

Prothorax about 2.84 times as long as head, sides slightly convex and diverging posteriorly, where it is 0.9 as wide as the median dorsal length; posterior angles with one pair of short bristles; surface smooth. Wings of fore pair with about 18 bristles on costa; anterior vein with a basal group of three bristles, followed closely by another group of three, and then by three widely separated ones in apical half; posterior vein with an equidistant series of four. Legs short and stout; fore femora swollen, fore tibiæ angulate at apex within and with a small bristle arising from the apex of the angle.

Abdomen about 1.4 times as wide as prothorax, smooth.

acutely conical and somewhat more heavily chitinized at apex; segment 10 longer than 9, divided above; bristles moderately long, pale.

Measurements of holotype (female): Length 0.893 mm.; head, length 0.052 mm., greatest width 0.093 mm.; eyes, length 0.039 mm., width 0.033 mm.; prothorax, length 0.148 mm., width 0.134 mm.; pterothorax, width 0.174 mm.; abdomen, greatest width 0.204 mm.; fore wings, length 0.492 mm., width at middle 0.027 mm., near base 0.050 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ).....	17	33	34	30	27	34	7	11
Width (μ).....	21	20	16	16	16	13	6	5

Total length of antenna, 0.193 mm.

Male (macropteros).—Length about 0.8 mm. Color and structure essentially as in female, except as follows: Fore tibiæ (Pl. III, fig. 6) slightly prolonged at apex within, forming a minute acute tooth. Abdomen with posterior margins of segments 4–8 prolonged into a series of oblique, postero-laterally-directed acute teeth (Pl. III, fig. 4); segment 9 unarmed.

Measurements of allotype (male): Length 0.792 mm.; head, length 0.059 mm., greatest width 0.096 mm.; eyes, length 0.042 mm., width 0.033 mm.; prothorax, length 0.139 mm., width 0.145 mm.; pterothorax, width 0.180 mm.; abdomen, greatest width 0.195 mm.; fore wings, length 0.492 mm., width at middle 0.027 mm., near base 0.050 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ).....	18	30	33	28	29	33	6	9
Width (μ).....	21	18	15	15	14	13	6	4

Total length of antenna, 0.186 mm.

Described from 48 females and 2 males taken by T. V. Ramakrishna Aiyar on shoots of *Ailanthus excelsa* at Coimbatore, India, in May, 1915.

Readily distinguished by the generic characters. The form of the tip of the abdomen of the female is suggestive of *Orythrips*.

Rhipiphorothrips cruentatus, new species.

Female (macropteros).—Length about 1.4 mm. Dorsal surface deeply reticulate. Color of fully matured individuals dark blackish brown, with legs and antennæ yellow and the head, dorsum of pterothorax laterad and caudad to scutellum, median third of abdomen, and last three abdominal segments distinctly paler; segments 7 and 8 of antennæ and apex of segment 6 more or less darkened with gray; fore wings yellowish, with costa and longitudinal veins slightly darker, and scale, posterior margin, and extreme base, dark brown; hind wings yellowish, with dark brown median vein. Teneral individuals paler than as above described and with the sides of head, thorax, and abdomen suffused with blood-red hypodermal pigmentation.

Head deeply rugoso-reticulate, about 1.21 times as wide as long and slightly longer than prothorax, very slightly broadest across eyes; vertex strongly elevated and produced in front of eyes over insertion of antennæ, notched anteriorly; cheeks nearly parallel in basal half, swollen behind eyes and abruptly constricted at extreme base where inserted in prothorax, the anterior margin of this neck-like constriction marked with a prominent, raised, arcuate, dark carina. Eyes about equal in length to their distance from posterior margin of head and half as wide as their interval, strongly protruding in front, nonsetose. Ocelli nearly equidistant, anterior ocellus directed forward and situated slightly in advance of anterior margin of eyes, posterior ocelli directed laterally; pigment bright red. Antennæ about 2.2 times as long as head, structure normal to genus.

Prothorax about 1.35 times as wide as long, as wide at apex as at base, sides evenly rounded, slightly shorter than head and with similar reticulation; color distinctly darker than that of head. Pterothorax 1.5 times as wide as prothorax, deeply reticulated; scutellum rugose, about 1.43 times as long as wide. Wings normal to genus, the scale of the fore pair heavily chitinized and, when the wings are at rest, fitting under the edge of the scutellum.

Abdomen about equal in width to pterothorax, sides deeply longitudinally rugoso-reticulate; segment 10 divided above; all bristles minute and scarcely visible, a dorsal pair near apex of segment 10 more conspicuous than the others, slightly expanded and truncate at apex.

Measurements of holotype (female): Length 1.37 mm.; head, length 0.174 mm., width across eyes 0.211 mm.; eyes, length 0.078 mm., width 0.054 mm., interval 0.106 mm., distance from posterior margin of head 0.070 mm.; prothorax, length 0.169 mm., width 0.228 mm.; pterothorax, width 0.341 mm.; abdomen, greatest width 0.348 mm.; fore wings, length 0.768 mm., width at middle 0.090 mm., near base 0.046 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ).....	30	54	75	63	50	48	17	50
Width (μ).....	28	39	26	25	25	20	12	6

Total length of antenna, 0.387 mm.

Male (macropterus).—Length about 1.1 mm. Color and structure essentially as in female, except as follows: Prothorax brown, concolorous with head. Abdomen bright yellow, sides with blood-red hypodermal pigmentation; sternites 3–7 each with a sharply delimited circular area at base; segment 4 with a small, lateral, toothlike projection; segment 10 with the lateral bristles simple, not dilated in the form of a broad V.

Measurements of allotype (male): Length 1.08 mm.; head, length 0.166 mm., width across eyes 0.203 mm.; eyes, length 0.072 mm., width 0.048 mm., interval 0.108 mm., distance from posterior margin of head 0.072 mm.; prothorax, length 0.152 mm., width 0.208 mm.; pterothorax, width 0.300 mm.; abdomen, greatest width 0.293 mm.; fore wings, length 0.672 mm., width at middle 0.081 mm., near base 0.045 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ).....	27	51	70	54	47	40	16	48
Width (μ).....	27	36	24	23	24	20	11	7

Total length of antenna, 0.353 mm.

Described from 15 females and 7 males collected as follows:

Coimbatore, India, March 14, 1916, T. V. Ramakrishna Aiyar; 10 females, 5 males, on grapevine leaves.

Coimbatore, India, March 15, 1916, T. V. Ramakrishna Aiyar; 4 females, 2 males, on grapevine leaves.

Peradeniya, Ceylon, February, 1917, A. Rutherford; 1 female, on leaves of *Careya arborea* (C. B. Williams' collection, No. 1002).

Closely allied to the two described species of the genus, but easily known from them by the secondary sexual characters of the male, the form of the prothorax, and the coloration.

Neoheegeria indica, new species. (Pl. III, figs. 1 and 2.)

Female (macropterous).—Length about 1.3 mm. Color dark blackish brown, with all tarsi, apical three-fourths of fore tibiæ, and tips of middle and hind tibiæ light lemon yellow; antennæ with apex of segment 2, all of segments 3–6, and basal two-thirds of segment 7, light lemon yellow, the remainder brown.

Head about 1.2 times as long as wide, broadest at posterior third, with sides slightly arcuate, and somewhat wider at posterior margin of eyes than at base, which is slightly constricted; vertex slightly produced over base of antennæ, the anterior ocellus barely overhanging and nearly attaining frontal costa; dorsal and lateral surfaces with faint anastomosing striæ and a few very minute spines; postocular bristles slender, dilated at tip, and about three-fourths as long as eyes. Eyes about one-third as long as head, not at all protruding, about equal in width to their interval, and of equal extent on dorsal and ventral surfaces. Ocelli anterior in position, the posterior pair opposite a line drawn behind anterior third of eyes. Antennæ (Pl. III, fig. 2) about 1.6 times as long as head, formed as in *Haplothrips*; sense cones short and inconspicuous; formula: 3, 1–1; 4, 2–2; 5, 1–1⁺; 6, 1–1⁺, 7 with one on dorsum near apex. Mouth cone acute and constricted at apex, attaining posterior margin of prosternum.

Prothorax along median dorsal line about 0.8 as long as head and (inclusive of coxæ) about 1.9 times as wide as long,

surface smooth; all usual bristles present, dilated at tip, and stouter than postoculars, the two pairs on anterior margin shortest. Wings distinctly narrowed at middle, nearly colorless; subbasal bristles equal in length, the two basal ones dilated at tip; six or seven accessory hairs on posterior margin. Tarsal tooth short, stout, and basal in position.

Abdomen only slightly wider than pterothorax and almost without sculpture; tergites 3-7 at extreme lateral margins with from five to seven pairs of small, stout spines, in addition to the usual one of two pairs of sigmoid bristles and the long straight one near posterior angles. Tube nearly twice as long as basal width and twice as wide at base as at apex, sides slightly convex. Lateral bristles on segments 3-8 short, blunt; terminal bristles slightly longer than tube, brown.

Measurements of holotype (female): Length 1.31 mm.; head, length 0.191 mm., width 0.156 mm.; eyes, length 0.066 mm., width 0.048 mm., interval 0.048 mm.; postocular bristles, length 0.048 mm.; prothorax, length 0.151 mm., width (inclusive of coxæ) 0.283 mm.; pterothorax, width 0.330 mm.; abdomen, greatest width 0.336 mm.; tube, length 0.120 mm., width at base 0.068 mm., at apex 0.033 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ).....	33	44	46	44	42	40	38	22
Width (μ).....	28	28	28	28	26	23	19	11

Total length of antenna, 0.309 mm.

Male (macropterus).—Length about 1.4 mm. Color and structure essentially as in female, except as follows: Eyes slightly larger, about 0.36 as long as head. Antennæ about 1.73 times as long as head. Prothorax nearly 0.9 as long as head; anterior marginal bristles sometimes minute and pointed. Tarsal tooth large, stout, and triangular. Abdomen more slender.

Measurements of allotype (male): Length 1.39 mm.; head, length 0.192 mm., width 0.155 mm.; eyes, length 0.072 mm., width 0.045 mm., interval 0.054 mm.; postocular bristles, length 0.057 mm.; prothorax, length 0.168 mm., width (inclusive of coxæ) 0.322 mm.; pterothorax, width 0.336 mm.; abdomen,

greatest width 0.300 mm.; tube, length 0.120 mm., width at base 0.065 mm., at apex 0.033 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ).....	36	46	50	48	47	42	39	25
Width (μ).....	26	26	26	27	23	21	19	11

Total length of antenna, 0.333 mm.

Described from 5 females and 3 males taken by T. V. Ramakrishna Aiyar on shoots of *Ailanthus excelsa* at Coimbatore, India, in May, 1915.

The species bears a close resemblance to those of the genus *Haplothrips*, but may be known by the long, pointed mouth cone.

ARRHENOTHRIPS, new genus

Head much longer than wide, vertex broadly rounded in front, not or only slightly produced; cheeks without spine-bearing warts, subparallel. Eyes rounded, prominent but not protruding. Ocelli anterior in position, the median ocellus overhanging. Antennæ eight-segmented; fifth segment slightly shorter than the fourth and longer than the sixth. Mouth cone acute, surpassing middle of prosternum; labial palpi much shorter than maxillary palpi. Prothorax enlarged in the female and equal in length to head, shorter and not enlarged in the male; fore femora of female greatly swollen, those of male only slightly so; both sexes with tibiæ slightly produced at apex within and tarsi with a large stout tooth. Pterothorax narrowed behind. Wings broad and of equal width throughout, closely fringed. Tube long (0.8 the length of head in the genotype).

Type: *Arrhenothrips ramakrishnae*, new species.

This genus is allied to *Gynaikothrips* and is thus a member of the large *Liothrips* complex whose species, almost without exception, are phyllophilous. In no genus of this group, however, are the fore legs and prothorax of the female enlarged and swollen; it is invariably the male which possesses these characters. The presence of the large tarsal tooth in both sexes is another important character.

Arrhenothrips ramakrishnæ, new species. (Pl. IV, figs. 1 and 2.)

Female (macropterous).—Length about 2.5 mm. Color dark blackish brown, with head, fore femora, middle and hind tarsi, and interstices of pterothoracic plates paler; fore legs with tibiæ, tarsi, and apices of femora yellow, the tibiæ darkened with gray or brown, particularly along outer surface; antennæ with segment 1 and inner basal half of segment 2 blackish brown, the remainder clear lemon yellow and of deeper tint toward apex.

Head about 1.65 times as long as wide, as broad across eyes as slightly behind them, cheeks nearly straight and slightly converging to base; vertex full, very slightly produced; dorsal and lateral surfaces deeply transversely striate with anastomosing lines, giving the cheeks a slightly roughened or serrated appearance; postocular bristles shorter than eyes, dilated at apex. Eyes one-third as long as head, prominent, slightly wider than their interval. Ocelli equidistant; anterior ocellus overhanging, opposite anterior margin of eyes; posterior ocelli opposite anterior half of eyes. Antennæ (Pl. IV, fig. 2) about 1.6 times as long as head; sense cones short and inconspicuous; formula: 3, 0-1; 4, 1-2⁺; 5, 1-1⁺; 6, 1-1⁺; 7 with one on dorsum near apex.

Prothorax equal in length to head and (inclusive of coxæ) nearly 1.5 times as wide as long, with dark median line, surface rather deeply subreticulate with anastomosing lines; all usual bristles present, anterior marginals and midlaterals small and pointed, others well developed and blunt, the two pairs near posterior angles longest and subequal to postoculars; coxal bristle about equal to anterior angular. Pterothorax wider than long and about equal in width to prothorax, sides slightly arcuate and converging posteriorly. Wings yellowish at base; fore wings with the three subbasal bristles about equal to coxal bristle and dilated at tip, with about fifteen accessory hairs on posterior margin. Fore femora about 1.5 times as long as and distinctly wider than head; fore tibiæ produced and

subangulate at inner surface of apex; fore tarsi with a stout and nearly straight tooth which is usually longer than width of tarsus.

Abdomen formed as in *Liothrips*, about equal in width to mesothorax. Tube about 0.8 as long as head and about 2.7 times as long as basal width, which is 2.1 times the apical. Lateral abdominal bristles dilated at apex, light brown in color, those on segment 9 pointed and nearly as long as tube; terminal bristles two-thirds as long as tube.

Measurements of holotype (female): Length 2.52 mm.; head, length 0.353 mm., width behind eyes 0.214 mm., width at base 0.187 mm.; eyes, length 0.114 mm., width 0.071 mm., interval 0.068 mm.; postocular bristles, length 0.084 mm.; prothorax, length 0.336 mm., width (inclusive of coxæ) 0.562 mm.; pterothorax, length 0.492 mm., width 0.552 mm.; abdomen, greatest width 0.569 mm.; tube, length 0.276 mm., width at base 0.102 mm., at apex 0.048 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ).....	69	72	99	98	87	75	65	40
Width (μ).....	51	44	39	46	43	39	33	16

Total length of antenna, 0.575 mm.

Male (macropterous).—Length about 2 mm. Color and structure essentially as in female, except as follows: Fore femora concolorous with prothorax and distinctly darker than head. Head 1.5 times as long as wide, cheeks distinctly rounded; antennæ about 1.7 times as long as head. Prothorax only about three-fourths as long as head and nearly 1.9 times as wide as long. Pterothorax distinctly wider than prothorax. Fore femora equal in length to and distinctly narrower than head; tarsal tooth shorter than width of tarsus. Abdomen narrower than mesothorax. Tube nearly three times as long as basal width, which is nearly twice the apical.

Measurements of allotype (male): Length 1.98 mm.; head, length 0.288 mm., width behind eyes 0.190 mm., width at base 0.156 mm.; eyes, length 0.100 mm., width 0.061 mm., interval 0.059 mm.; postocular bristles, length 0.076 mm.; prothorax,

length 0.222 mm., width (inclusive of coxæ) 0.414 mm.; pterothorax, width 0.452 mm.; abdomen, greatest width 0.431 mm.; tube, length 0.240 mm., width at base 0.084 mm., at apex 0.045 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ).....	54	57	81	78	74	66	60	35
Width (μ).....	42	38	36	41	40	37	29	14

Total length of antenna, 0.505 mm.

Described from 11 females and 18 males taken on shoots of *Mimusops elengi* at Coimbatore, India, April 6, 1916, by T. V. Ramakrishna Aiyar, Government Entomologist, after whom the species is named.

Liothrips ordinarius, new species. (Pl. IV, figs. 3 and 4.)

Female (*macropterous*).—Length about 2 mm. (1.9–2.2 mm.). Color black; fore tarsi and middle of inner surface of fore tibiæ brownish yellow, middle and hind tarsi and articulations of legs brown; antennal segments 3–6 yellow, 3 sometimes with a narrow brown band at basal third and generally with another at extreme apex, 4 darker than 3 and clouded with brown in at least the apical half, 5 and 6 concolorous with 4 and suffused with brown in apical third and two-fifths respectively, 7 and 8 dark blackish brown, the former yellow at base; fore wings very light gray, with the scale and the region of the three subbasal bristles dark brown, margins more or less darkened.

Head about as wide as long, broadest slightly behind eyes, cheeks gently arched, slightly convergent posteriorly; vertex truncate, not produced, the anterior ocellus directed forward and overhanging; dorsal and lateral surfaces transversely striate with anastomosing lines and with a very few minute bristles; postocular bristles capitate, shorter than eyes. Eyes nearly 0.4 as long as head, not protruding. Posterior ocelli in front of a line drawn through middle of eyes. Antennæ (Pl. IV, fig. 3) about 2.2 times as long as head, of the general form and structure common to the species of the genus, but with segment 8 subpedicellate and not closely united to seg-

ment 7; sense cone formula: 3, 0-1; 4, 1-2⁺; 5, 1-1⁺; 6, 1-1⁺; 7 with one on dorsum near apex. Mouth cone long, acute, attaining base of prosternum.

Prothorax along median dorsal line about three-fourths as long as head and (inclusive of coxæ) about 2.3 times as wide as long; all bristles present, capitate, the two pairs at the posterior angles longest and subequal; coxal bristle about equal in length to midlateral. Pterothorax wider than prothorax, sides slightly arcuate. Wings long, closely fringed, of nearly the same width throughout; fore pair with the three subbasal bristles capitate and with about 25 accessory hairs on posterior margin. Fore tarsi unarmed.

Abdomen of normal form, large and heavy, wider than pterothorax. Tube about 0.9 as long as head and slightly more than twice as wide at base as at apex. Lateral abdominal bristles capitate, yellowish; terminal bristles pointed, brown, slightly shorter than tube.

Measurements of paratype (female): Length 1.90 mm.; head, length 0.208 mm., greatest width 0.215 mm., width at base 0.187 mm.; eyes, length 0.079 mm., width 0.067 mm., interval 0.078 mm.; postocular bristles, length 0.062 mm.; prothorax, length 0.161 mm., width (inclusive of coxæ) 0.372 mm.; pterothorax, length 0.408 mm., width 0.408 mm.; abdomen, greatest width 0.461 mm.; tube, length 0.186 mm., width at base 0.088 mm., at apex 0.042 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ).....	48	56	59	66	60	63	61	48
Width (μ).....	38	35	34	39	34	30	24	16

Total length of antenna, 0.461 mm.

Male (macropterous).—Length about 1.8 mm. Color and structure essentially as in female, except that the antennæ are twice as long as head. The fore tarsi are unarmed.

Measurements of paratype (male): Length 1.84 mm.; head, length 0.222 mm., greatest width 0.211 mm., width at base 0.174 mm.; eyes, length 0.086 mm., width 0.066 mm., interval 0.072 mm.; postocular bristles, length 0.068 mm.; prothorax,

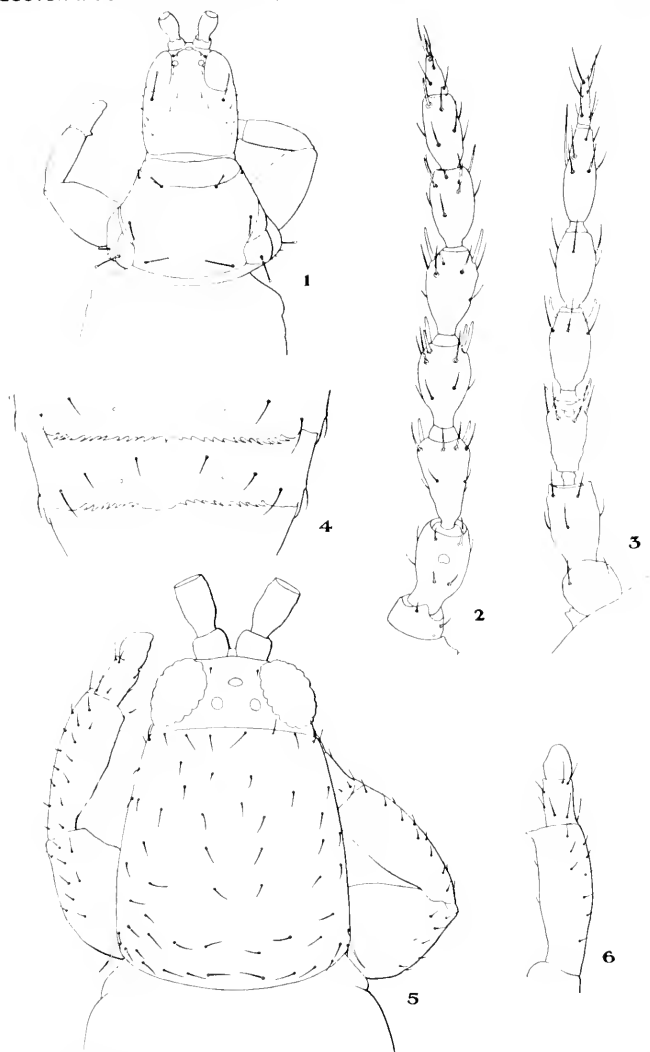


Fig. 1. *Neoheegeria indica*, head and prothorax; female, holotype. (Minute bristles omitted from appendages and pronotum.)

Fig. 2. *Neoheegeria indica*, left antenna; female, holotype.

Fig. 3. *Perissothrips parviceps*, right antenna; female, paratype.

Fig. 4. *Perissothrips parviceps*, posterior margins of abdominal segments 6 and 7; male, allotype.

Fig. 5. *Perissothrips parviceps*, head and prothorax; female, holotype.

Fig. 6. *Perissothrips parviceps*, right fore tibia; male, allotype.

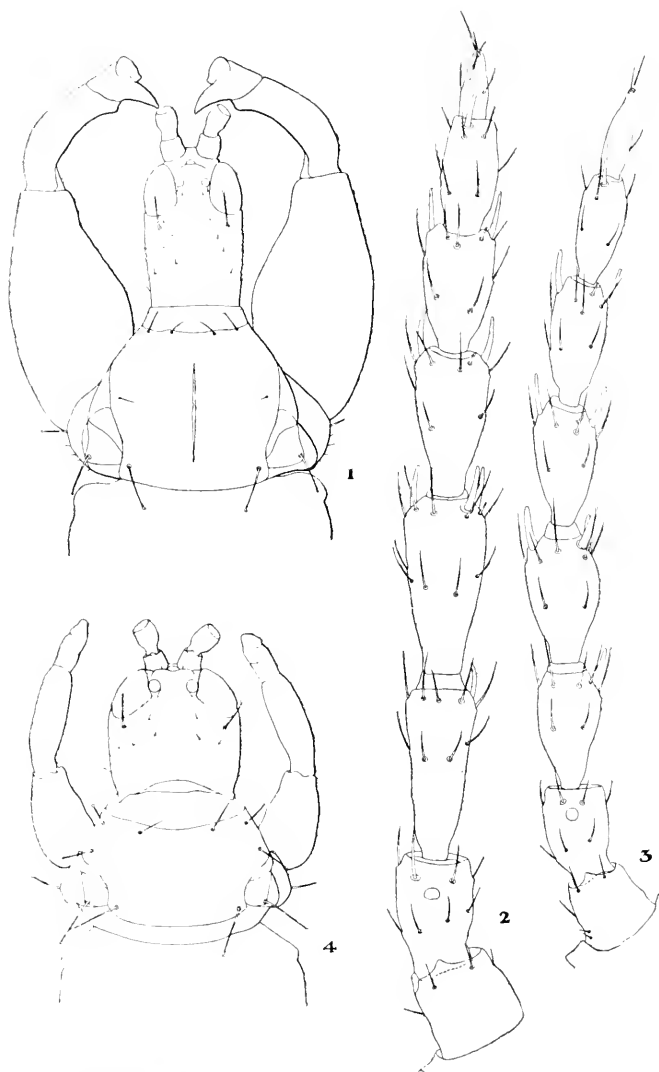


Fig. 1. *Arrhenothrips ramakrishnae*, head and prothorax; female, holotype. (Minute bristles omitted from appendages and pronotum.)

Fig. 2. *Arrhenothrips ramakrishnae*, right antenna; female, paratype.

Fig. 3. *Liothrips ordinarius*, right antenna; female, holotype.

Fig. 4. *Liothrips ordinarius*, head and prothorax; female, paratype. (Minute bristles omitted from appendages and pronotum.)

length 0.164 mm., width (inclusive of coxæ) 0.372 mm.; pterothorax, length 0.396 mm., width 0.396 mm.; abdomen, greatest width 0.404 mm.; tube, length 0.192 mm., width at base 0.083 mm., at apex 0.039 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ).....	52	57	62	65	63	64	54	44
Width (μ).....	37	33	33	36	31	29	22	13

Total length of antenna, 0.461 mm.

Described from 4 females and 12 males taken by T. V. Ramakrishna Aiyar on shoots of *Sesbania grandiflora*, at Coimbatore, India. The date is not given.

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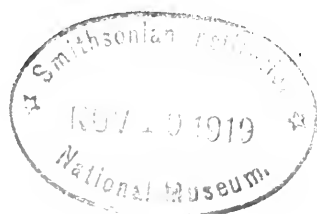
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FOUR NEW SOUTH AMERICAN MOSQUITOES

(Diptera, Culicidæ)

By J. BONNE-WEPSTER AND C. BONNE

The following four species of *Wyeomyia* were bred by us in Surinam.

Wyeomyia occulta, new species.

Female: Proboscis short and stout, distinctly swollen at tip, with dark scales above, bluish gray reflection, pale scales below. Apex with small hairs. Palpi short, one-seventh of proboscis, dark. Antennæ about as long as proboscis, joints slender, subequal, pilose, brownish, joints nearest to tori thickened apically; tori subspherical, with a cup-shaped apical excavation, with whitish pruinosity. Clypeus rounded, dark brown, pruinose, nude. Eyes nearly contiguous at vertex, black. Margins of eyes with whitish pruinosity. Occiput clothed with dark flat scales with bluish reflection, a large patch of white scales on underside of the head. Two setæ at vertex, projecting between the eyes, and smaller ones on margins.

Prothoracic lobes well separated, clothed with broad scales with dull violet reflection, a row of coarse black bristles on front margin. Mesonotum densely clothed with lanceolate, appressed dark scales, with yellowish gray luster. Long black bristles on anterior margin and over roots of wings. No hairs on the disk. Scutellum trilobate, coloration similar to that of mesonotum, each lobe with a tuft of brown bristles. Postnotum elliptical, with flat white scales and a group of small setæ near posterior margin. Pleuræ and coxæ clothed with patches of appressed silvery white scales.

Abdomen compressed, truncate apically, short dark brown terminal setæ present; dorsal vestiture of bronzy black, flat scales, venter with yellowish white somewhat raised scales, colors separated in a straight line.

Wings longer than abdomen, hyaline, petiole of second marginal cell one-fifth as long as its cell, that of second posterior cell about half as long as its cell. Outstanding scales broadly lanceolate, rounded at tip, many of them obliquely truncate. Basal cross-vein more than its own length from anterior cross-vein. Halteres yellowish with black knobs.

Legs black, slender, front femora slightly swollen, femora pale brassy beneath. Hind tibia shorter than first hind tarsal joint. Claw formula: 0.0-0.0-0.0.

Length: body, 4 mm.; wing, 3.5 mm.

Male: Proboscis as in female, but clothed beneath with distinctly yellowish-white scales, especially at the base. Palpi short. Antennæ similar to those of the female. Coloration of head, thorax, and abdomen as in the female. Abdomen compressed, expanded at tip. Apex with long coarse bristles. Long hairs on underside of abdomen, forming a dense fringe laterally.

Legs dark, front femora pale beneath; mid legs pale beneath throughout, hind legs all white beneath. Mid legs with second, third, fourth, and fifth tarsal joints white above. Hind legs with three last joints pale brassy on upper side.

Claw formula: 0.0-0.0-0.0.

Body: length, 3.5 mm.; wing, 3 mm.

Genitalia: Side pieces spicular, small hairs on inner margins, scaled on inner margins and base, nearly twice as long as wide, the tips concavely tapered, somewhat excavated at tip for insertion of clasp filament, an indistinct lobe present, bearing two stout setæ and a number of fine hairs. Three long setæ in a row below the middle of the side piece. Clasp filament divided, a slender recurved lobe with terminal hook, a large broad lobe with marginal row of coarse teeth and a row of dense, fine hairs, increasing in length along one of the margins; a small leaf-like lobe; a long moderately broad lobe, with coarse

spines on one side. Harpes with curved unmodified tip. Each basal appendage with two spines, curved at tip.

Larva: Head rounded anteriorly, posterior angles slight, antennæ moderate, smooth, uniform.

Upper pair of dorsal head hairs single, lower double, ante-antennal hairs in threes.

Lateral dense stellate tufts on thorax.

Comb of eighth segment in a triangular patch; air tube straight, smooth, slightly tapered, about four times as long as wide, false pecten of many spines on apical two-thirds of tube. Basally and ventrally a five-haired tuft of long hairs, apically and ventrally three two-haired and three-haired tufts, dorsally about six five-haired tufts. Anal segment as long as wide, dorsal plate moderate, reaching well down the sides, dorsal tuft of four long hairs and one smaller one, lateral hair single, subventral hairs in a stellate tuft.

Pupa: Thoracic mass small, a tuft of two hairs from near margin of eye is bent twice; respiratory trumpets small. Abdomen rather long, a pair of fan-shaped dorsal tufts on first segment; a pair of long single subdorsal hairs on second to fifth segments. Tufts of feathered hairs on apex of seventh and eighth segments. Paddles small, pointed.

Larvæ found in a jelly-like mass at the base of *Heliconia* leaves. March, 1918, sandy district, Surinam.

Some of these larvæ have been kept for more than four months in the laboratory before they pupated.

We place this species provisionally in the genus *Wyeomyia* (in the broader sense as used by Howard, Dyar and Knab), although it has scales on the postnotum. It comes very near the genus *Dendromyia* Theo., but the scales on the postnotum are white as in *Menolepis* Lutz.

***Wyeomyia albosquamata*, new species.**

Female: Proboscis short and stout, distinctly swollen at the tip; dark scaled with bluish gray reflection; apex with small hairs. Palpi short, one-eighth as long as proboscis, dark with a few scattered white scales. Antennæ about as long as the proboscis, joints slender, subequal, brownish, whorls long, tori

subspherical, with a cup-shaped apical excavation, with whitish pruinosity. Clypeus rounded, brownish, pruinose. Eyes separated at vertex, black. Occiput clothed with flat dark scales with dull bluish reflection, a patch of yellowish white scales on vertex and well behind. White scales on underside of the head. Two setæ at vertex, projecting between the eyes, and smaller hairs on margins.

Prothoracic lobes well separated, clothed with appressed dark scales and yellow ones below. A row of coarse bristles on front margin. Mesonotum densely clothed with appressed scales, dark with a yellowish and bluish reflection on disk, white scales on front margin. Over roots of wings and on antescutellar space golden scales. Over roots of wings golden brown bristles. Scutellum trilobate, clothed with flat dark scales, with coppery bluish luster, each lobe with a few long bristles. Postnotum elliptical with flat white scales and a group of setæ near posterior margin. Pleuræ and coxæ with patches of appressed silvery white scales.

Abdomen compressed, truncate apically; dorsal vestiture of bronzy black flat scales, venter with yellowish white scales, some of these scales raised. Colors separated in a straight line. First segment with many long outstanding golden hairs; short hairs internixed with the scales dorsally on all the segments and projecting from the apices. Ventrally also hairs present between the scales, especially on the four last segments.

Wings longer than abdomen, hyaline, petiole of second marginal cell more than one-third of the length of its cell, that of second posterior cell about two-thirds of its cell. Outstanding scales lanceolate, narrower near the base, a few present with blunt tips. Basal cross-vein less than its own length from anterior cross-vein. Halteres pale with dark knobs.

Legs, brown, lighter on underside, femora brassy beneath; front and mid legs without contrasting colors. Hind legs with fourth and fifth joints silvery on one side, this color interrupted on the base of the fifth joint.

Claw formula: 0.0-0.0-0.0.

Body: length, 3.5 mm.; wing, more than 3 mm.

Male: Proboscis and palpi as in female. Antennæ more plumose than in female. Coloration similar to that of female. Wings longer than abdomen, hyaline; petiole of second marginal cell one-third the length of its cell, that of second posterior cell two-thirds of its cell.

Legs brown, underside distinctly brassy, front and mid legs without contrasting colors, hind legs with the last two tarsal joints silvery on one side, with slight interruption between the joints.

Claw formula: 0.0-0.0-0.0.

Body: length, 3.5 mm.; wing, over 3 mm.

Genitalia: Side pieces twice as long as wide, two stout hairs, bent inwardly, below the middle. Below these a row of five long hairs. A small lobe present with minute hairs. Clasp filament with lobes, the latter ornamented on margins with spines and hairs. Harpes curved, ending in four teeth. Each basal appendage with three stout hairs.

Larva: Head rounded. Antennæ small, smooth, a small tuft outwardly. Lower pair of dorsal head hairs in threes, upper pair multiple; ante-antennal hairs multiple. Comb of the eighth segment more than 20 spines in a single row, single spine thorn-shaped. Anal segment not as long as wide. Anal plate large, spicular. Subdorsal hairs in twos, lateral hair single. Subventral tuft multiple. Anal gills long. Air-tube smooth, conically tapered at apical half, somewhat widened at the middle, covered with longitudinal rows of long single hairs, basally a tuft of two or three.

Larvæ found in Bromeliaceæ. Lawa River, March, 1917. Surinam.

This species is provisionally placed in the genus *Wyeomyia*, although it has scales on the postnotum. It comes near to Lutz's genus *Menolepis* on account of the patch of white scales on the postnotum. According to Theobald's table *Menolepis* has the wing scales linear. This species has them broader.

Wyeomyia fallax, new species.

Female: Proboscis short, swollen at tip, clothed with dark scales, some of these scales with light blue reflection, labellæ with fine outstanding setæ. Palpi short, one-sixth of the length of proboscis, clothed with dark scales with golden shine and a few small hairs. Clypeus rounded, pruinose, nude. Antennæ shorter than proboscis, brown, pilose, small hairs of joints with silvery shine. Tori subspherical with a cup-shaped apical excavation, grayish white. Eyes black, separated by a narrow but distinct bare stripe of integument. Occiput clothed with brown flat scales with dull blue luster, a white scaled margin along the eyes joining a yellowish white patch on vertex. Two stout hairs projecting between and a few smaller ones along margins of eyes. A patch of white scales on underside of the head.

Prothoracic lobes clothed with dark flat scales, tip white scaled. Coarse dark bristles on front margin. Mesonotum clothed with appressed elliptical dark scales with golden luster. Dark hairs on front margin and over roots of wings. Scutellum trilobate, coloration similar to that of mesonotum. Each lobe with a few bristles.

Postnotum dark brown, prominent, nude. Pleuræ and coxæ clothed with flat white scales.

Abdomen compressed, blunt at tip, dorsally clothed with dark flat scales with bronzy luster. Venter clothed with yellowish white scales, raised along the midventral line. Very few hairs present. Colors separated in a straight line.

Wings hyaline, longer than abdomen, petiole of second marginal cell one-third length of its cell, that of second posterior cell more than one-half its cell. Basal cross-vein more than its own length from anterior cross-vein. Outstanding scales linear, slightly broader toward apex of wing. Halteres yellow scaled with dark knobs.

Legs dark with bronzy luster, femora brassy beneath, almost white at base, tibiæ brassy beneath, midlegs with tip of second and all of third and fourth joints silvery white on one side. Fifth joint with a few white scales only.

Claw formula: 0.0-0.0-0.0.

Body: length, 3.5 mm.; wing, 3 mm.

Larva: Head rounded. Antennæ small, with a two-haired tuft. Upper head-hairs multiple, lower in threes, ante-antennal tufts in fives. Lateral comb of eighth segment in a long uniform row. Two long single hairs behind the comb. Air-tube subcylindrical with rounded tip, a number of irregularly placed long single hairs present. A few small two-haired tufts near apex. Anal segment as long as wide, plate large, reaching well down the sides. Subdorsal hairs double, lateral hair single. Subventral hairs a multiple tuft. Anal gills longer than anal segment.

Larvæ found in Bromeliaceæ, Paramaribo, Surinam, December, 1916.

Wyeomyia fallax seems to be closely allied to *Wyeomyia telestica* Dyar and Knab. There are, however, slight differences in the coloration of the legs and *Wyeomyia fallax* has the prothoracic lobes with a white tip. A description of the male genitalia might perhaps point out further differences.

***Wyeomyia splendida*, new species.**

Female: Proboscis very long and slender, very slightly curved, clothed with dark flat scales with coppery reflection, labellæ pointed, a few small setæ present. Palpi short, about one-fifteenth as long as the proboscis, clothed with dark scales, and a few long hairs near tip. Antennæ much shorter than the proboscis, the joints slender, subequal, pilose, brown. Tori subspherical with a cup-shaped apical excavation, yellow with whitish pruinosity; hairs of whorls moderate, rather sparse. Clypeus rounded, convex, yellowish-brown. Eyes well separated at vertex, black with coppery reflection. A whitish pruinosity between the eyes and above the clypeus. Occiput clothed with brownish flat scales, with violet and golden reflection at vertex, white spots on underside, two setæ at vertex and smaller ones along margins of eyes.

Prothoracic lobes well separated, clothed with flat dark scales with brilliant blue and violet reflection; a row of bristles on front margin. Mesonotum clothed with elliptical, appressed

brown scales with golden and coppery reflection, scales on front margin and sides pale yellow. Bristles on front margin and over roots of wings. Scutellum strongly trilobate, clothed with flat black scales with blue reflection; on the base of the midlobe, however, they are pale and in some lights silvery white. Each lobe with a group of dark bristles. Postnotum elliptical, prominent, yellow, a group of setæ near posterior margin. Pleuræ and coxæ yellow with patches of flat white scales.

Abdomen subcylindrical, compressed, truncate apically and with terminal setæ; smaller setæ at apices of the segments ventrally. Clothed dorsally with flat black scales with light violet reflection; ventrally flat creamy white scales, raised along mid-ventral line. The colors at sides deeply incised.

Wings hyaline, longer than abdomen. Petiole of second marginal cell one-third as long as its cell, that of second posterior cell more than one-half its cell; basal cross-vein less than its own length from anterior cross-vein; scales of veins ligulate, denser and broader near the apex of the wing, brown. Halteres yellowish with black knobs.

Legs long and slender, bronzy black, with violet reflection, femora brassy beneath, tibiæ and tarsi with brighter bronzy luster beneath. Four last tarsal joints of midlegs pure white on one side, tip dark. On hind legs all the basal parts of the joints covered with white scales on one side, diminishing in number toward the apices. On the first joint the scales are hardly visible, on the last two joints they cover the whole length of the joint except the tip, and on the second and third joints intermediate stages.

Claw formula: 0.0-0.0-0.0.

Length: body, 4 mm.; wing, 4 mm.

Male: Proboscis very long and slender, the slight curve more distinct than in the female. Palpi as in the female. Antennæ with the joints shorter than in the female, the whorls of hairs longer, so that it gives them a denser appearance. Coloration of head, thorax, abdomen, and legs as in female. Abdomen expanded at tip.

Claw formula: 0.0-0.0-0.0.

Length: body, 3.5 mm.; wing, 3 mm.

Genitalia: Side piece twice as long as wide, a small pointed lobe on inner margin present, clothed with fine hairs. Four long stout hairs in a row beyond the middle of the side piece. Clasp filament simple, slightly broadened beyond the middle, outer side with some small spines. Harpes with curved dentate tip, each basal appendage with three broad spines, curved at tip.

Larva: Head rounded. Antennæ moderate, uniform, smooth, a two-haired tuft beyond the middle. All head hairs multiple. Comb of eighth segment in a patch. Air-tube attenuated from near the base, rather long, slender at apical part. A false pecten of very fine spinelike hairs on basal half of tube. All hairs on tube single, except a few at base, decreasing in length toward the tip. Anal segment as long as wide. Anal plate moderate. Subdorsal hairs placed in a group of two long ones and a shorter one single. Lateral hair single, subventral hairs in a small tuft. Anal gills twice as long as the segment.

Pupa: Thoracic mass subpyriform, small, a tuft of two long hairs projecting from near margin of eyes, bent once, and a tuft of three straight hairs; respiratory trumpets rather long, narrow. Abdomen rather long, a pair of fan-shaped dorsal tufts on first segment; on second and third segments subdorsal hairs single, long; on second segment a very long single lateral hair present; on fourth, fifth, and sixth segments subdorsal hairs double, long; on seventh and eighth segments a dense multiple tuft of feathered hairs. Anal paddles small, pointed.

Larvæ found in Bromeliaceæ; sandy district of colony (March, 1918); Lawa River (March, 1917), Sarah Creek (January, 1919). Surinam.

Wyeomyia splendida comes near to *Wyeomyia trinidadensis* Theo. and *Wyeomyia longirostris* Theo., but it is a very distinct species by the coloration of the legs and the peculiar male genitalia with the simple clasp-filament.

DESCRIPTION OF THE LARVÆ OF WYEOMYIA APHOBEMA DYAR

(*Diptera, Culicidæ*)

By J. BONNE-WEFSTER AND C. BONNE

Head rounded. Antennæ moderate, uniform, smooth, a single hair outwardly placed. Upper head hairs in threes, lower in twos, ante-antennal hairs in fives, ante-clypeal hairs in twos.

Lateral comb of eighth segment in a patch. Air-tube slightly attenuated near the base, but widened at the middle. False pecten of numerous spines over the whole length of the tube, irregularly placed in longitudinal rows; single hairs on tube and some two-haired tufts, basal ones longest.

Anal segment longer than wide, plate large, well down the sides. Subdorsal hairs in twos, lateral hair single, subventral tuft small, multiple. Anal gills longer than segment.

The number of the head hairs was in some of the specimens different; the ante-antennal hairs having one or two less, the upper head hairs in twos or fours, or the lower in threes.

Larvæ found in Bromeliaceæ near Paramaribo, Surinam, August 1918, in sandy district of the colony (March, 1918); and in the interior of the colony, Lawa River (March, 1917), and Sarah Creek (January, 1919).

A REVISION OF THE AMERICAN SABETHINI OF THE SABETHES GROUP BY THE MALE GENITALIA

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

The tribe Sabethini divides into two groups on the character of the male structure. The *Joblotia* group has a simple, primitive structure and requires no further elucidation than given in the monograph. The *Sabethes* group, however, has the structures complicated and the species numerous. I have

postponed a consideration of this group to the last of our mosquitoes on account of the difficulty of the subject and the scarcity of material. The material has continued scarce, and it is not probable that the species will ever be represented by large series even when searched for, as their restricted habits prevent them from becoming abundant. On this account many species are represented only by females, which has rendered the following study far from complete.¹ Only the main outlines can be discussed, but these are of interest.

Breaking away entirely from the adult characters commonly in use, we find that the group divides into a number of well-defined genera. I treat them here as such, although the absence of female characters may not allow all of them to be subsequently recognized. The specialization affects in general the clasp filament, the basal structures remaining simple. In one branch, the side-pieces have undergone modification. The following table will be self-explanatory. The characters of the new genera are given here and are not repeated under the separate headings.

TABLE OF GENERA

1. Clasp filament apical on side-piece.....	2
Clasp filament not apical, reduced, the angle of the side-piece more or less produced	13
2. Clasp filament widened at tip and lobed	3
Clasp filament widened at tip, slightly notched, but not lobed <i>Menolepis</i> Lutz	
Clasp filament simple, with pointed tip	<i>Dodecamyia</i> Dyar
3. Clasp with the lobes well developed	4
Clasp with the lobes reduced	12
4. Clasp with four lobes, usually much complicated.....	5
Clasp with three lobes, not excessively complicated.....	8
Clasp with two lobes, articulated and opposed.. <i>Limatus</i> Theobald	
5. Harpes with projecting appendages	<i>Miamyia</i> Dyar
Harpes distorted; unci inflated and lobed.....	<i>Dinomyia</i> Dyar
Harpes and unci simple, normal.....	6
6. Clasp-stem shorter than the greatly expanded lobes.....	7
Clasp-stem long and slender, lobes small.....	<i>Heliconiamyia</i> Dyar

¹Actually of 97 species here recognized, only 45 are known to me in the male.

7. Clasp filament with a slender basal arm.....*Sabethinus* Lutz
Without this structure*Sabethes* Robineau-Desvoidy
8. Harpes with two finger-shaped processes at tip, *Diphalangarpe* Dyar
Harpes without appendages 9
9. Clasp with an angular subapical branch, a triangular widening
and a slender branch near base.....*Triamyia* Dyar
Clasp of three long branches, one with enlarged tip
Phoniomyia Theobald
Clasp of three short branches, rarely coalesced..... 10
10. Clasp with two simple arms and expanded hairy lateral one
Pentemyia Dyar
Clasp with central arm enlarged, the others small or obsolete.. 11
11. Stem of clasp short, irregular*Dendromyia* Theobald
Stem of clasp long and slender*Wyeomyia* Theobald
Clasp without stem, the lobes arising close to base, *Cleobannea* Dyar
12. The three stout hairs of side-piece unmodified...*Calladimyia* Dyar
Two of the three hairs approximated, modified or joined
Decamyia Dyar
13. Apical angle of side-piece produced but little, with a thorn;
clasp reduced, but irregular and spurred.....*Lemmamyia* Dyar
Apical angle of side-piece strongly produced; clasp reduced,
simple*Hystatomyia* Dyar

Genus MIAMYIA, new genus

Type species: *Wyeomyia symmachus* Dyar & Knab.

TABLE OF SPECIES

(Coloration)

- Colors of the abdomen separated on the sides in a straight line*SYMMACHUS* Dyar & Knab
- Colors separated in an irregular line, the ventral color forming incisions on the posterior angles of the segments.
- Mid tarsi of male with second to fourth joints white below;
hind legs entirely white below.....*CODIOCAMPA* Dyar & Knab
- Mid tarsi of male with only tip of second, third, and fourth joints white below; tip of third, fourth, and fifth of hind tarsi white below*SERRATA* Theobald

(Genitalia)

- Appendages of harpes broad, with coarse hairs in a comb
symmachus Dyar & Knab
- These appendages slender with a long narrow tuft
codiocampa Dyar & Knab, *serrata* Theobald

Miamyia symmachus Dyar & Knab.

Wyeomyia symmachus Dyar & Knab, Smiths. Misc. Colls., Quart. iss., lii, 262, 1909.

Wyeomyia euthes Dyar & Knab, Smiths. Misc. Colls., Quart. iss., lii, 263, 1909.

Wyeomyia symmachus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, plate 2, fig. 7, 1912.

This species does not differentiate itself in coloration from the ordinary *Wyeomyia* type. The larvæ occur in bamboo, a breeding place that always produces peculiar forms. The larva is rather peculiar and is allied to that of *codiocampa*.

Miamyia codiocampa Dyar & Knab.

Wyeomyia codiocampa Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 209, 1907.

Wyeomyia codiocampa Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, plate 3, fig. 10, 1912.

The adult of this and the following have peculiar abdominal coloration, resembling that of *Limatus* and *Phoniomyia*; but in these genera the lateral incisions are on the anterior angles of the segments. The larvæ occur in bamboo.

Miamyia serrata Theobald.

Dendromyia serrata Theobald, Mon. Culic., iv, 615, 1907.

Theobald gives a rough sketch of the genitalia which in no way resembles the actual structures and reminds one of a gross caricature. They are really very similar to those of *codiocampa*, as I discover by a mount made from a specimen kindly sent by Dr. Arthur Neiva, of Brazil.

Genus DINOMYIA, new genus

Type species: *Dinomyia proviolans* Dyar.

A single species is known in this genus.

Dinomyia proviolans, new species (Pl. V, fig. 1).

Male. Clypeus and postnotum nude, dark brown, pruinose, the latter with a group of setæ posteriorly. Head with flat blue-black scales, without white margin to the eyes, a patch of silvery white scales on the sides low down. Prothoracic lobes rather darkly violaceous; mesonotum with dark brown

scales. Abdomen blackish above, silvery white below, the colors separated on the sides in a straight line. Legs bronzy-black scaled, the femora whitish below; mid tarsi with the apical half of the second joint, the third and fourth continuously white-scaled below; hind tarsi with the fourth and fifth joints continuously white-scaled below. Wing-scales broad, obliquely subtruncate, bronzy blackish; basal cross-vein nearer the base of the wing than the anterior. Proboscis moderate, slender, slightly expanded at tip, about as long as the abdomen.

Genitalia. Side-pieces three times as long as wide, the tips conical and much narrowed. Clasp-filament sessile, divided into four lobes: a short slender arm; a long spatulate one with recurved tip and spines on one margin; a long slender one with stout apical hook and spine opposite it; a short slender one with row of four close teeth at tip and a feather-like projection from the summit. Harpes bent at right angles and elongated. Unci inflated, constricted, then a large inflated trilobate apex. Basal appendages small, but with long spines which are clawed, angularly expanded before tip.

Types, three males, No. 22006; U. S. Nat. Mus.; Porto Bello, Panama, March, 1911 (A. Busck); Caldera Island, Porto Bello Bay, Panama, January 4, 1908 (A. H. Jennings).

I am almost certain that this is the male of *Wyeomyia phroso* Howard, Dyar & Knab, described as having prothoracic lobes of the color of the mesonotum. On looking at the type of *phroso*, I can see a blue tint in a strong light; the blue in *proviolans* is dark and obscure; but I keep the new name to avoid any possibility of founding the new genus on a misidentification.

Genus SABETHINUS Lutz

Sabethinus Lutz in Bourroul, Mosq. do Brasil, 48, 57, 1904.

Type species: *Sabethinus intermedius* Lutz.

Theobald describes the genitalia of the type species, but not in such a manner as to be of service in the present review. The genitalia are unknown to me, and I have placed the genus

on another species than the type, whether rightly or wrongly remains to be seen.

TABLE OF SPECIES

(Coloration)

1. Postnotum without scales 2
Postnotum with scales 5
2. Prothoracic lobes metallic blue or purple 3
Prothoracic lobes blackish scaled, with white at base and tip *moerbista* Dyar & Knab
3. Abdomen with purple and coppery red reflections
purpureus Theobald
Abdomen with blue or greenish luster 4
4. Anal abdominal setæ long; hind tarsi dark. IDENTICUS Dyar & Knab
These setæ shorter; fifth hind tarsal white below
UNDOSUS Coquillett
5. Setæ at base of wings jet black..... 6
These setæ light golden brown..... *aurescens* Lutz
6. Mesonotum metallic green *intermedius* Lutz
Mesonotum deep metallic blue *albiprivatus* Lutz

(Genitalia)

1. Clasp filament with four branches, the basal one long, simple,
the inner broad, with a row of spines
identicus Dyar & Knab, *undosus* Coquillett

These two species, the only ones of which I know the genitalia, are fully treated in the monograph under the same names.

Genus SABETHES Robineau-Desvoidy

Sabethes Robineau-Desvoidy, Mém. Soc. Nat. Hist. Paris, iii, 411, 1827.

Type species: *Sabethes locuples* Robineau-Desvoidy.

TABLE OF SPECIES

(Coloration)

1. Mid legs only with tufts 2
Tufts also on the front legs, none on the hind, *tarsopus* Dyar & Knab
Front legs also with small tufts..... 6
2. Tuft on mid tibia, not on tarsus..... *purpureus* Peryassú
Tuft also on the tarsus..... 3
3. No white on the legs..... 4
White markings present on some of the tarsi..... 5

4. Basal cross-vein beyond the anterior one.....CYANEUS Fabricius
Cross-veins coincident or the anterior one within
albiprivus Theobald
5. Part of fringe of first mid tarsal white....*bipartipes* Dyar & Knab
Some white also on the tibial tuft.....*chroiopus* Dyar & Knab
6. Tarsi marked with white 7
Tarsi without white markings.....*lutzii* Theobald
7. Fore tarsi with white on second to fourth joints
goeldii Howard, Dyar & Knab
Fore tarsi black with a white line on apical half of second
joint*schausi* Dyar & Knab

The male is known in but one species:

Sabethes cyaneus Fabricius.

Culex cyaneus Fabricius, Syst. Antliat., 35, 1805.

Sabethes locuples Robineau-Desvoidy, Mém. Soc. Nat. Hist.
Paris, iii, 412, 1827.

Culex remipes Wiedemann, Ausser, zweifl. Ins., i, 573, 1828.

Sabethes cyaneus Howard, Dyar & Knab, Mosq. N. & Cent. Am.
& W. I., ii, plate 2, fig. 1, 1912.

Genus SABETHOIDES Theobald

Sabethoides Theobald, Mon. Culic., iii, 328, 1903.

Type species: *Sabethoides confusus* Theobald.

No male is known to me in this genus.

TABLE OF SPECIES

(Coloration)

1. Prothoracic lobes collar-like; cross-veins in line; abdomen
with iridescent whitish segmental bands
nitidus Theobald, *rangeli* Surcouf & Gonzales Rincones

Genus TRIAMYIA, new genus

Type species: *Wycomyia aporonoma* Dyar & Knab.

TABLE OF SPECIES

(Coloration)

1. Scutellum darkAPORONOMA Dyar & Knab
Scutellum with a golden spot on each lobe.....*personata* Lutz

Triamyia aporonoma Dyar & Knab.

Wyeomyia aporonoma Dyar & Knab, Journ. N. Y. Ent. Soc.,
xiv, 230, 1906.

Wyeomyia aporonoma Howard, Dyar & Knab, Mosq. No. & Cent.
Am. & W. I., ii, pl. 5, fig. 31, 1912.

This species differentiates itself from the others with coppery prothoracic lobes by having a coppery spot on the vertex of head.

Found in Central America and Panama, and I have lately received specimens from Surinam (Mrs. J. Bonne-Wepster).

The larvæ occur in cocoanut husks, hollow trees, etc. I know *personata* only in the female, but think it will fall in the genus.

Genus **PHONIOMYIA** Theobald

Phoniomyia Theobald, Mon. Culic., iii, 311, 1903.

Type species: *Wyeomyia longirostris* Theobald.

TABLE OF SPECIES

(Coloration)

- | | |
|---|------------------------|
| 1. Mesonotum dark bronzy and blue | LONGIROSTRIS Theobald |
| Mesonotum dull gray-brown | TRINIDADENSIS Theobald |

(Genitalia)

- | | |
|---|-------------------------------|
| 1. Expansion on basal arm of clasp smooth; apical hook re-curved | <i>longirostris</i> Theobald |
| This expansion pilose-denticulate on the margin; apical hook laterally directed | <i>trinidadensis</i> Theobald |

Phoniomyia longirostris Theobald (Pl. V, fig. 2).

Wyeomyia longirostris Theobald, Mon. Culic., ii, 275, 1901.

The larvæ live in water in Bromeliaceæ according to Pery-assú.

Phoniomyia trinidadensis Theobald (Pl. V, fig. 3).

Wyeomyia trinidadensis Theobald, Mon. Culic., ii, 277, 1901.

Fully described in the Monograph under the genus *Wyeomyia*. The larvæ live in water in Bromeliaceæ.

Genus PENTEMYIA, new genus

Type species: *Wyeomyia drapetes* Dyar & Knab.

But a single species at present known. Others may be found among the species of *Wyeomyia* with dark prothoracic lobes when the males are known.

Pentemyia bromeliarum Dyar & Knab.

Wyeomyia asullepta Dyar & Knab (not Theobald), Journ. N. Y. Ent. Soc., xiv, 228, 1906.

Wyeomyia bromeliarum Dyar & Knab, Proc. Biol. Soc. Wash., xix, 138, 1906.

Wyeomyia drapetes Dyar & Knab, Smiths. Misc. Colls., Quart. iss., lii, 264, 1909.

Wyeomyia espartana Howard, Dyar & Knab (in part, not Dyar & Knab), Mosq. No. & Cent. Am. & W. I., iii, 108, 1915.

The identification with *asullepta*, adopted by Dyar & Knab, is remote, as that species has golden yellow prothoracic lobes. The name *bromeliarum* is unfortunate, as the larvæ live in bamboo joints and not in Bromeliaceæ. In the monograph we place *bromeliarum* widely separated; but that is due to an error of observation, for, while the type is only represented by two legs, another specimen from the same collector shows white tips on the prothoracic lobes. Correcting this will cause *bromeliarum* and *drapetes* to fall together. The type of *espartana* has long scales on the bases of the forks of the second vein as stated by us; but this is not the case with the specimens from Panama associated with *espartana* in the monograph. The name *espartana* must remain founded upon the single female type, the male being unknown, and its characters as given in the monograph canceled. There remain the slight differences given in the genitalia in the monograph (compare Pls. 2 and 3, figs. 8, 9, and 12); but these I do not verify on reëxamination. They are due to the artist having attempted to draw too accurately and represent things which she really could not see. The delicate outlines of these parts are difficult to follow, especially with imperfect mounts.

Genus *HELICONIAMYIA*, new genusType species: *Wyeomyia galoa* Dyar & Knab.

TABLE OF SPECIES

(Coloration)

1. Female with white on the mid tarsi; bronzy shade on occiput
very broad (male unknown) *chalcocephala* Dyar & Knab
- Female without white on mid tarsi; bronzy shade on vertex
narrow *GALOA* Dyar & Knab

Heliconiamyia galoa* Dyar & Knab (Pl. V, fig. 5).Wyeomyia galoa* Dyar & Knab, Proc. Biol. Soc. Wash., xix, 140, 1906.*Wyeomyia galoa* Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 4, fig. 23, 1912.¹

In the type, a diffuse bronzy median band on the occiput is quite distinct; the eyes have a narrow white border, though it is obsolete at the vertex. The species should therefore be placed in the coloration table in the Monograph in dichotomy 36 with the other *Heliconia*-inhabiting species. The hind tarsi of the female take a white reflection below on the last joint only, but there seems to be no definite marking. In the male, both the hind and mid legs are continuously white below. The specimen mentioned below under *onidus* was originally determined as *galoa* and quite properly with the coloration as the sole guide.

Heliconiamyia chalcocephala* Dyar & Knab.Wyeomyia chalcocephala* Dyar & Knab, Proc. Biol. Soc. Wash., xix, 140, 1906.*Wyeomyia chalcocephala* Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 8, fig. 27, 1912.

The male genitalia seem indistinguishable from those of *galoa*. Further material must be obtained to show whether the two species have closely similar males or whether the male of supposed *chalcocephala* is really a male of *galoa*. The

¹Figure 23 is bad; the structure is shown better in figure 27. I refigure it.

females seem distinct. Both species occur in *Heliconia* in Guatemala.

Genus DENDROMYIA Theobald

Dendromyia Theobald, Mon. Culic., iii, 313, 1903.

Type species: *Wyeomyia luteoventralis* Theobald.

The male of the type species is unknown to me; but as it appears to be somewhat close to *chrysomus* D. & K., I make the present identification.

TABLE OF SPECIES

(Coloration)

1. Prothoracic lobes silvery	2
Prothoracic lobes coppery golden	6
Prothoracic lobes violet or blue	9
2. Abdomen silvery-tipped above	3
Abdomen without silvery tip above	5
3. No white on mid tarsi	<i>minor</i> Dyar & Knab
With white marking on the mid tarsi.....	4
4. From Florida	VANDUZEEI Dyar & Knab
From the Bahamas	<i>bahama</i> Dyar & Knab
From Cuba	ARGYRURA Dyar & Knab
5. From Martinique	<i>fratercula</i> Dyar & Knab
From Santo Domingo	<i>sororcula</i> Dyar & Knab
6. Scutellum silvery; a large silver spot on vertex of head	
	<i>homotina</i> Dyar & Knab
Scutellum dark-scaled	7
7. Eyes with a white border and white line between them	
	<i>luteoventralis</i> Theobald, <i>quasiluteoventralis</i> Theobald
Vertex with a white spot; no white line between the eyes.....	8
8. Proboscis short and stout	<i>agnostips</i> Dyar & Knab
Proboscis long and slender	CHRYSOMUS Dyar & Knab
9. Scutellum silvery (prothoracic lobes "mauve")...	<i>magna</i> Theobald
Scutellum dark-scaled	10
10. Eyes with a continuous white margin	11
Eyes without a continuous white margin.....	13
11. Mid tarsi marked with white in the female, the hind spotted	
	<i>guatemala</i> Dyar & Knab
Hind tarsi dark in the female.....	12
12. White on mid tarsi on tip of second, third, and fourth joints	
	<i>abascanta</i> Dyar & Knab ¹

¹The slide has been lost; see genus *Diphalangarpe* below.

- White on mid tarsi on apical half of second, third to fifth joints *megalodora* Dyar & Knab
13. A white spot on vertex of occiput..... 14
No white spot on vertex; wing-scales narrow, ligulate
homothæ Dyar & Knab
14. Mid and hind tarsi spotted with white in the female
violescens Dyar & Knab
Mid tarsi white-spotted but the hind tarsi all dark..... 15
15. Proboscis moderately long; prothoracic lobes violet..... 16
Proboscis long; lobes pale blue; a blue spot on vertex
PHILOPHONE Dyar & Knab
16. White margin of the eye on less than the lower half; lobes with a coppery reflection *SMITHII* Coquillett
The white margin reaching above the lower half of eye, or almost to vertex..... *mataea* Dyar & Knab

(Genitalia)

1. The three lobes of clasp filament united by membrane, all rather broad *chrysomus* Dyar & Knab
Lateral lobes free, narrow 2
2. Three lobes of clasp about equally long; a tuft of hairs from the base of the mid lobe
vanduzeei Dyar & Knab, *argyrura* Dyar & Knab
Side lobes of clasp shorter than the mid lobe..... 3
3. Apex of mid lobe of clasp pilose only *smithii* Coquillett
Apex of mid lobe of clasp capitate with a double tooth
philophone Dyar & Knab

Dendromyia chrysomus Dyar & Knab.

Phoniomyia chrysomus Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 208, 1907.

Wyeomyia chrysomus and *mataea* Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 3, fig. 14, pl. 4, fig. 17, 1912.

Wyeomyia mataea Howard, Dyar & Knab (in part, not Dyar & Knab), Mosq. No. & Cent. Am., & W. I., iii, 93, 1915.

The type of *chrysomus* is a single male from Panama, the prothoracic lobes of which take a distinct coppery reflection. The types of *mataea* are two females from Mexico and Salvador, the lobes showing little or no coppery tint, being blue. In Mr. Jennings' bred series from Panama, cited in the Monograph under *mataea*, the males have the lobes more coppery tinted than the females, but I think only one species is represented in his series. Certainly Jennings' male is *chrysomus*, to

judge by the genitalia. The larvæ live in Bromeliaceæ, but no specimens are before me.

Dendromyia vanduzeei Dyar & Knab.

Wyeomyia vanduzeei Dyar & Knab, Proc. Biol. Soc. Wash., xix, 138, 1906.

Wyeomyia vanduzeei Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 3, fig. 13, 1912.

The larvæ occur in Bromeliaceæ, as fully described in the monograph.

Dendromyia argyrura Dyar & Knab.

Wyeomyia argyrura Dyar & Knab, Proc. U. S. Nat. Mus., xxxv, 70, 1908.

Wyeomyia conchita Dyar & Knab, Smith. Misc. Colls., Quart. iss., lii, 264, 1909.

The larvæ live in Bromeliaceæ. Fresh material from Doctor Pazos contains males. The genitalia do not differ from those of *vanduzeei*. I think it is probable that *vanduzeei*, *argyrura*, and *bahama* represent only local forms of one species, and I have accordingly separated them on locality in the table. The differences given in the monograph tables between *argyrura* and *conchita* cannot be substantiated, and I accordingly unite them.

Dendromyia smithii Coquillett.

Aedes smithii Coquillett, Can. Ent., xxxiii, 260, 1901.

Wyeomyia smithii Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 3, fig. 16, 1912.

Our familiar pitcher-plant mosquito. The prothoracic lobes verge distinctly on a coppery tint, though with blue ground.

Dendromyia philophone Dyar & Knab.

Phoniomyia philophone Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 209, 1907.

Wyeomyia philophone Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 3, fig. 15, 1912.

The larvæ live in Bromeliaceæ.

Genus DIPHALANGARPE, new genus

Type species: *Wyeomyia abascanta* Dyar & Knab.

Diphalangarpe abascanta Dyar & Knab

Wyeomyia abascanta Dyar & Knab, Proc. U. S. Nat. Mus., xxxv, 65, 1908.

Wyeomyia abascanta Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, plate 4, fig. 19, 1912.

A distinct genus seems warranted for this species, as the genitalia are figured with two finger-shaped processes on top of the harpes. Unfortunately the single slide is lost and there is no second male at hand to mount. The larvæ were found in a terrestrial Bromeliad resembling a Century plant in Trinidad.

Genus **WYEOMYIA** Theobald

Wyeomyia Theobald, Mon. Culic., ii, 267, 1901.

Type species: *Wyeomyia grayii* Theobald (Mon. Culic., ii, 269, 1901).

The type species is unknown to me. It comes from the island of Santa Lucia, whence I have no material. I am assuming it to have dark prothoracic lobes and to be allied to *fallax* Bonne-Wepster & Bonne and *abia* Dyar & Knab. *Wyeomyia*, as here defined, may be considered to be founded on *leucopisthepus* Dyar & Knab.

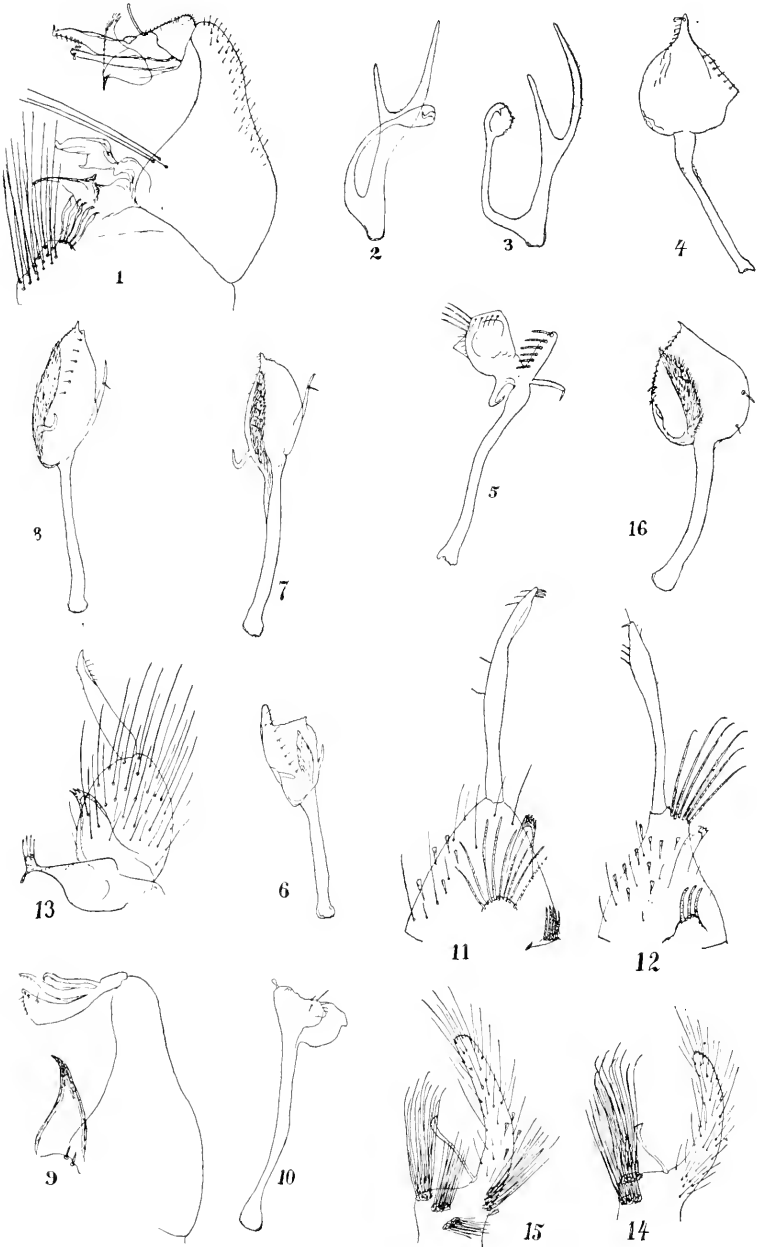
TABLE OF SPECIES

(Coloration)

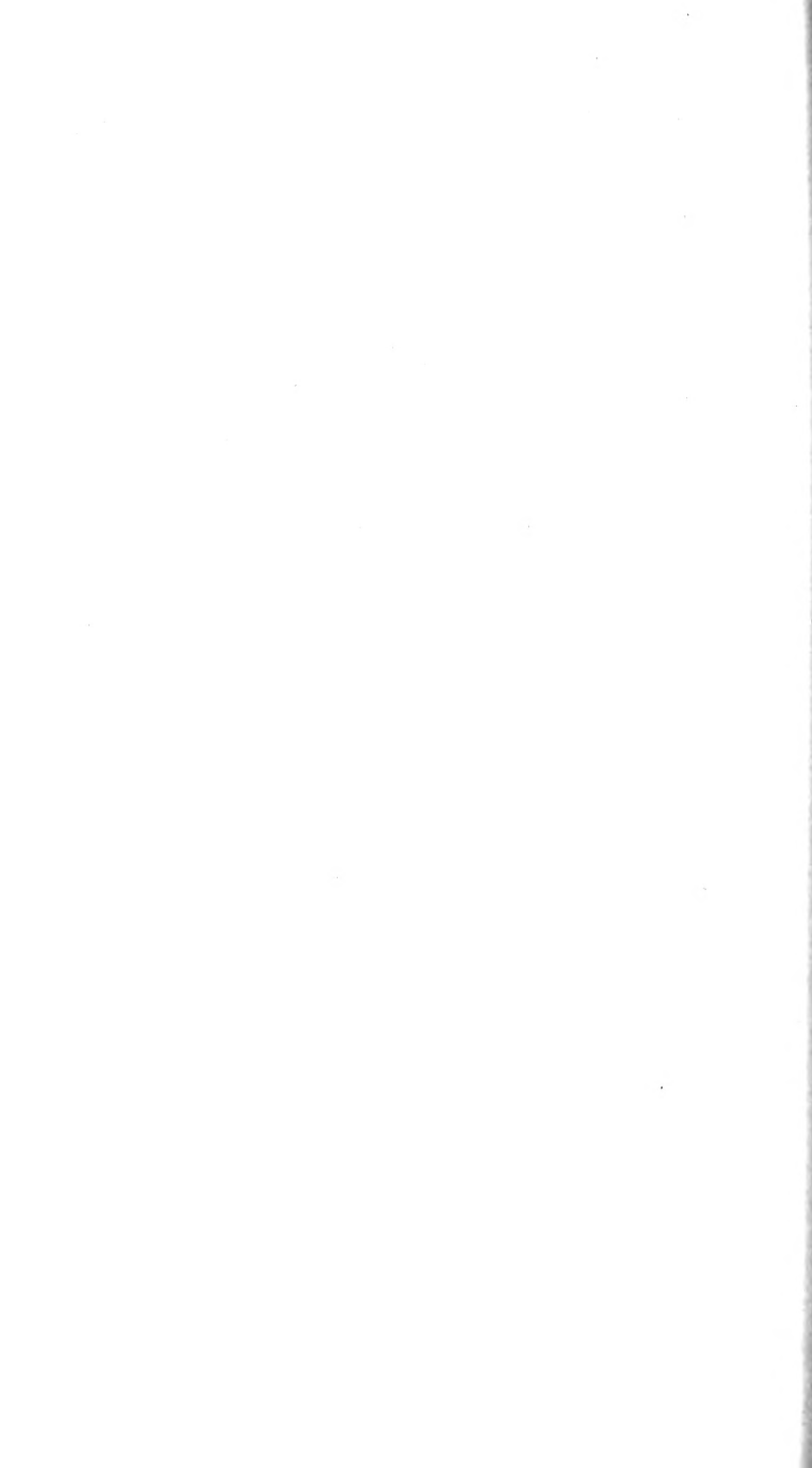
- | | |
|---|-----------------------------|
| 1. Prothoracic lobes blue | 2 |
| Prothoracic lobes darkly colored like the mesonotum..... | 3 |
| 2. Mid tarsi white-marked; hind usually white spotted | |
| MITCHELLII Theobald | |
| Tarsi all dark | MELANOPUS Dyar |
| 3. Prothoracic lobes with a distinct white tip..... | 4 |
| Without this character | 11 |
| 4. Eyes with a white-scaled margin..... | 5 |
| Without this character | 10 |
| 5. Female with mid and hind tarsi white-marked (male the same) | 6 |
| Female with the mid tarsi only white-marked..... | 7 |
| Female with the hind tarsi only white-marked..... | 8 |
| Female with the tarsi all dark | 9 |
| 6. The white marks restricted; mid tarsi with no white on second joint | labesba Howard, Dyar & Knab |
| White marks less restricted; mid tarsi with the apex of second joint white..... | ABLATES Dyar & Knab |

EXPLANATION OF PLATE V

1. *Dinomyia phroso* Howard, Dyar & Knab (*proviolans* Dyar), male genitalia, side view (half).
2. *Phoniomyia longirostris* Theobald, clasp filament.
3. *Phoniomyia trinidadensis* Theobald, clasp filament.
4. *Wycomyia melanopus* Dyar, clasp filament.
5. *Heliconiomyia galoa* Dyar & Knab, clasp filament.
6. *Wycomyia fallax* Bonne-Wepster & Bonne, clasp filament.
7. *Wycomyia rolunca* Dyar & Knab, clasp filament.
8. *Wycomyia adelpha* Dyar & Knab, clasp filament.
9. *Cleobonca occulta* Bonne-Wepster & Bonne, male genitalia, side view (half).
10. *Menolepis albosquamata* Bonne-Wepster & Bonne, clasp filament.
11. *Dodecamyia aphobema* Dyar, male genitalia.
12. *Dodecamyia splendida* Bonne-Wepster & Bonne, male genitalia.
13. *Dodecamyia clasolunca* Dyar & Knab, male genitalia.
14. *Hystatomyia circumcincta* Dyar & Knab, side-piece.
15. *Hystatomyia intonca* Dyar & Knab, side-piece.
16. *Wycomyia roluncetta* Dyar, clasp filament.



MALE GENITALIA OF SABETHINE MOSQUITOES



19.	Mid tarsi white-marked in the female	20
	Mid tarsi dark in the female	SCOTINOMUS Dyar & Knab
20.	Hind tarsi dark in the female (male unknown)	
	<i>celænocephala</i> Dyar & Knab	
	Hind tarsi white-marked	21
21.	Female with fourth mid tarsal white below; hind tarsi with bases of second, third and most of fourth and fifth white-marked (male unknown)	<i>hapla</i> Dyar & Knab
	Male with third mid tarsal white below; hind tarsi with most of fifth joint white below, the other joints scarcely marked (female unknown)	ROLONCETTA Dyar
	Male with third to fifth mid tarsals white below; hind tarsi with bases of fourth and fifth joints broadly white-marked (female unknown)	ROLONCA Dyar & Knab
(Genitalia)		
1.	Tip of mid lobe not widely expanded	2
	Tip widely expanded, squarely ended	6
2.	Mid lobe with small expanded tip and central core	
	<i>telestica</i> Dyar & Knab	
	Mid lobe without projecting expanded tip	3
3.	Mid lobe without free lateral arms	4
	Mid lobe with small free lateral arm on each side.....	5
4.	Mid lobe without central core	<i>melanopus</i> Dyar
	Mid lobe with pilose central core	<i>roloncetta</i> Dyar
5.	Lower end of clasp-tip rounded, free from the stem	
	<i>adelpha</i> Dyar & Knab, <i>ablades</i> Dyar & Knab	
	Lower end of clasp-tip produced narrowly down the stem	
	<i>rolonca</i> Dyar & Knab	
6.	Tip of central lobe hammer-headed; lateral lobe furcate	
	<i>abebeba</i> Dyar & Knab	
	Central lobe quadrately expanded; lateral lobes simple.....	7
7.	One angle of mid lobe produced. <i>fallax</i> Bonne-Wepster & Bonne	
	Mid lobe squarely ended	8
8.	Central core of mid lobe large; one lateral lobe large, with setæ	<i>mittchellii</i> Theobald
	Central core more or less small; lateral lobes small, pointed..	9
	Central core absent; small lateral lobe prolonged down the stem	<i>abrachys</i> Dyar & Knab
9.	Central core broadly ended, fimbriate, with two ridges	
	<i>scotinomus</i> Dyar & Knab	
	Central core small, ovate; small lateral lobe not prolonged down the stem	<i>leucopisthepus</i> Dyar & Knab

Wyeomyia melanopus, new species (Pl. V, fig. 4).

Male. Palpi black-scaled; clypeus and tori nude, pruinose, partly whitish; occiput with flat black scales with bluish reflection, a white spot at the vertex and narrow central white line, white scales on the sides below; prothoracic lobes blue-violet, shading to whitish at the tips; mesonotum and scutellum with light brown scales, a white line on the lateral edge; postnotum brown, nude, pruinose, with a group of setæ posteriorly; abdomen black above, silvery white below, the colors separated on the sides in a straight line; legs with the tarsi entirely bronzy black; wing-scales small, dense, on the forks of the second vein ligulate at the base, becoming shorter and more triangular apically.

Genitalia. Side pieces inserted on the upper half of the segment, about three times as long as wide, conical, the tips narrowed and down-curved, the filaments capable of being directed straight inward; filament with long slender uniform stem, the tip expanded into a rounded lobe with pointed bud-shaped tip, with a central ridge running from the tip halfway down; a row of setæ along one margin, which is angled, representing one side lobe; the other side is smoothly rounded, the lateral lobe being quite obsolete. Harpes long, a little bent in the middle, digitate, with five teeth. Unci similar, smaller, pointed. Basal appendages with two spines, articulated and opposed to the side pieces.

Type, male, No. 22005, U. S. Nat. Mus.; Porto Bello, Panama, January 2, 1908 (No. 119), bred from a Bromelia on a fallen tree near a brook (A. H. Jennings).

Two species with blue prothoracic lobes from Panama are unknown in the male, *agnostips* D. & K. and *homothe* D. & K.; but these have white marks on the tarsi in the female, so that I cannot associate this male with either of them.

Wyeomyia telestica Dyar & Knab.

Wyeomyia telestica Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 230, 1906.

Wyeomyia telestica Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 4, fig. 24, 1912.

The larvæ occur in Bromeliaceæ in Trinidad, as fully described in the monograph. I have captured specimens from Surinam which appear to be this species (Mrs. J. Bonne-Wepster).

Wyeomyia fallax Bonne-Wepster & Bonne (Pl. V, fig. 6).

Wyeomyia fallax Bonne-Wepster & Bonne, Ins. Ins. Mens., vii, 110, 1919.

The larvæ occur in Bromeliaceæ in Surinam, as recorded by Mrs. J. Bonne-Wepster and Dr. C. Bonne.

Wyeomyia rolonca Dyar & Knab (Pl. V, fig. 7).

Wyeomyia rolonca Dyar & Knab, Proc. Ent. Soc. Wash., xi, 173, 1910.

The larvæ occur in Bromeliaceæ in Panama, collected by Mr. A. H. Jennings.

Wyeomyia roloncetta, new species (Pl. V, fig. 16).

Head with black scales with greenish reflection, without white border to the eyes above; prothoracic lobes darkly colored like the mesonotum; mid tarsi with the third joint marked with white below, its base and the last two joints black, contrasting; hind tarsi faintly but largely white on the fifth joint below, perhaps slight traces of white at the bases of the preceding joints; wing-scales narrowly ligulate, those on the forks of the second vein becoming a little broader toward the tip of the wing.

Genitalia. Clasp filament with the tip enlarged, bud-shaped, without lateral arms, the spine and seta of the long arm being borne on one side of the enlargement, a slight irregularity on the side indicating the short arm; tip pointed, with fine setæ on one side reaching nearly to tip; central core large, nearly reaching tip, pilose; median row of setæ reduced to two. Side pieces with the tips attenuated and downcurved with three long hairs below. Harpes and unci well-developed, normal.

Type, male, No. 22027, U. S. Nat. Mus.; Porto Pello, Panama, March 5, 1908, bred from a Bromelia growing on a tree in old Fort San Felipe (A. H. Jennings).

This may be the male of *W. hapla* Dyar & Knab, but the white mark on the under side of the mid tarsi is on a different joint. The difference may be sexual, but this remains to be proved.

Wyeomyia adelpha Dyar & Knab (Pl. V, fig. 8).

Wyeomyia adelpha Dyar & Knab, Proc. Biol. Soc. Wash., xix, 140, 1906.

Described from captured females from Esparta and Zent, Costa Rica. Males are before me from Estrella or Orosi, Costa Rica (C. Picado), which, though in bad condition, are certainly referable here. They were bred by Señor Picado, probably from Bromeliaceæ, and killed too soon after emergence.

Genitalia. Side pieces three times as long as wide, conically tapered at apex, the three hairs inserted close together near base of side piece. Clasp with long slender uniform stem; apical expansion narrowly elliptical, the tip shortly pointed, a broad pilose core reaching nearly to tip; two rows of setæ, one coarse and widely set, the other small and closely set; long lateral arm rather narrow, with a spine before tip; short lateral arm infolded, curved. Harpes slender, long, normal, toothed at tip; unci small, pointed. Basal appendages small, with one or two stout spines.

Wyeomyia ablabes Dyar & Knab.

*Wyeomyia ablabe*s Dyar & Knab, Proc. U. S. Nat. Mus., xxxv, 66, 1908.

*Wyeomyia ablabe*s Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, plate 4, fig. 21, 1912.

The larvæ occur in Bromeliaceæ in southern Mexico, as fully described in the monograph. The species is probably not different from *adelpha*. I have not the larvæ for comparison. The genitalia are alike. The colorational differences given of *ablabe*s having a white tip to the prothoracic lobes and *adelpha* not, may be due to the condition of the specimens, the former being bred and fresh, the latter captured.

Wyeomyia abebela Dyar & Knab.

Wyeomyia abebela Dyar & Knab, Proc. U. S. Nat. Mus., xxxv, 67, 1908.

Wyeomyia abebela Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 4, fig. 22, 1912.

The larvæ occur in Bromeliaceæ in southern Mexico, as fully described in the monograph.

Wyeomyia mitchellii Theobald.

Dendromyia mitchellii Theobald, Mosq. or Culic. Jam., 37, 1905.

Wyeomyia ochrura Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 229, 1906.

Wyeomyia antoinetta Dyar & Knab, Proc. Biol. Soc. Wash., xix, 141, 1906.

Wyeomyia mitchellii Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 4, fig. 20, 1912.

This species breeds in Bromeliaceæ in the Greater Antilles and southern Florida. The white marks at the bases of the hind tarsal joints vary in size and are sometimes absent (*antoinetta*). I have lately received many typical *mitchellii* from Florida, taken by Mr. C. A. Mosier on Paradise Key.

Wyeomyia abrachys Dyar & Knab.

Wyeomyia abrachys Dyar & Knab, Smith. Misc. Colls., Quart. iss., lii, 262, 1909.

Wyeomyia abrachys Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 5, fig. 26, 1912.

The larvæ were found in Bromeliaceæ on an island in Porto Bello Bay, Panama (East Coast), as fully described in the monograph.

Wyeomyia scotinomus Dyar & Knab.

Phoniomyia scotinomus Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 209, 1907.

Wyeomyia dymodora Dyar & Knab, Proc. U. S. Nat. Mus., xxxv, 68, 1908.

Wyeomyia scotinomus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., pl. 5, fig. 30, 1912.

The larvæ occur in Bromeliaceæ in Panama and the Canal Zone, as described in the monograph.

Wyeomyia leucopisthepus Dyar & Knab.

Wyeomyia leucopisthepus Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 212, 1907.

Wyeomyia chresta Dyar & Knab, Smiths. Misc. Colls., Quart. iss., lii, 263, 1909.

Wyeomyia chresta, *simmsi* and *leucopisthepus* Howard, Dyar & Knab, l. c., ii, pl. 4, fig. 25, p. 5, figs. 28, 29, 1912.

Wyeomyia simmsi Howard, Dyar & Knab (in part, not Dyar & Knab), Mosq. N. & Cent. Am. & W. I., iii, 146, 1915.

The female has the mid tarsi white on the outside at tip; hind tarsal joints broadly white at the bases of the fourth and fifth, specks on the second and third. The male has much less of white than the female, which is the reverse of the usual condition. The male *simmsi* of the monograph is this species, but the female type has, apparently, dark mid tarsi and must be held apart. The legs are broken in the single type and stuck on a card-point, so there may be some question as to the fact. In the monograph tables, we place *leucopisthepus* as having dark mid tarsi in the female, but we had no female at the time. The larvæ occur in Bromeliaceæ in the Canal Zone, Panama.

Genus CLEOBONNEA, new genus

Type species: *Wyeomyia occulta* Bonne-Wepster & Bonne.

A single species occurs in the genus, which is characterized by the absence of a stem to the clasp, the three branches arising almost directly from the tip of the side piece.

Cleobonnea occulta Bonne-Wepster & Bonne (Pl. V, fig. 9).

Wyeomyia occulta Bonne-Wepster & Bonne, Ins. Ins. Mens., vii, 105, 1919.

The larvæ were found in a jelly-like mass at the bases of the leaves of a *Heliconia* in Surinam by Mrs. J. Bonne-Wepster and Dr. C. Bonne.

This may be the same as *Dendromyia ulocoma* Theobald (Mon. Culic., iii, 313, 1903), described from British Guiana. Theobald's description is insufficient and, in any case, his type appears to be in such poor condition that a perfect description could not be prepared from it. See Doctor Howard's notes

(Mosq. No. & Cent. Am. & W. I., iii, 121, 1915). In addition the females of *intonca* D. & K., *circumcincta* D. & K., and *canonus* H., D. & K. are indistinguishable from this in coloration, which does not add to the ease of identifying Theobald's name.

Genus LIMATUS Theobald

Limatus Theobald, Mon. Culic., ii, 349, 1901.

Simondella Laveran, C. R. Soc. Biol., liv, 1160, 1902.

Type species: *Limatus durhamii* Theobald.

Eliminating *methysticus*, which I place in the genus *Lemamyia*, there is nothing to add to the account in the monograph. *Dendromyia paraënsis* Theobald (Mon. Culic., iii, 316, 1903), is apparently a *Limatus*, as Peryassú says that the prothoracic lobes are yellow and the abdominal colors are incised anteriorly on the segments. There is also a *Limatus* described from Argentina, *L. leontiniæ* Bréthes (Bol. Inst. Ent. y Pat. Veg., i, 41, 1912); but I do not know these species in nature.

Genus DECAMYIA, new genus

Type species: *Wyeomyia onidus* Dyar & Knab.

Three species fall in this genus, apparently inseparable on colorational characters. The larvæ occur in the flower bracts of *Heliconia* and *Calathea*. All the species are widely distributed.

TABLE OF SPECIES

(Genitalia)

1. Detached hairs of the side-piece elongated and approximated,
straight 2
These hairs bent at right angles and thickened, *onidus* Dyar & Knab
2. These two hairs long, double the length of the clasp
pseudopecten Dyar & Knab
These hairs shorter, equal to the length of the clasp
eloisa Howard, Dyar & Knab

Decamyia onidus Dyar & Knab.

Wyeomyia onidus Dyar & Knab, Smith. Misc. Colls., Quart. iss.,
lii, 261, 1909.

Wyeomyia pantoia Dyar & Knab, Smith. Misc. Colls., Quart. iss.,
lii, 262, 1909.

Wyeomyia cacodela Dyar & Knab, Smith. Misc. Colls., Quart. iss., lii, 265, 1909.

Wyeomyia onidus, *pantoia* and *cacodela* Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 5, figs. 33, 34, pl. 6, fig. 35, 1912.

In this species the white margin to the eyes is normally distinct and continuous, though narrow; there is a faint median pale bronzy shade on the occiput; the hind tarsi have the last two joints white below, the black area widening at the tip of the fourth joint and, in certain lights, appearing to interrupt the white there; but it does not really do so, even in the type of *onidus*. The fore and mid tarsi are dark in the female; in the male, the mid legs have a white luster beneath throughout, but the last two tarsal joints are contrastingly black below. In the table of the monograph, we place *cacodela* first "without a median pale stripe on occiput;" but in the male type I can see this quite distinctly even with a hand lens. It is less plain in the female type, though traces are visible. Again we say: "Tarsi all dark in the female." This is clearly an error of observation, for the female type shows the usual white marking, although, as the tarsi are rubbed, it is obscure and only visible in the right light. Again we place *pantoia* also in the section "eyes without a white border;" but this seems unnecessary as far as the type series is concerned. On the other hand, specimens reared by Mr. A. H. Jennings from *Heliconia* at San Pablo, Canal Zone, Panama, the genitalia of which agree perfectly, have all the white markings reduced to obsolescence, both the eye-margin and the hind tarsal marking being distinguishable only as traces after prolonged search in special lights. This occurs in both sexes, four specimens. The larval differences given in the monograph for *cacodela* I think are without specific value.

The larvæ occur in the flower-cups of *Heliconia* of the types of *champneiana*, *luteofusca*, and *acuminata* in Trinidad and Panama.

***Decamyia pseudopecten* Dyar & Knab.**

Wyeomyia pseudopecten Dyar & Knab, Proc. Biol. Soc. Wash., xix, 139, 1906.

Wyeomyia pseudopecten Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 5, fig. 32, 1912.

The larvæ occur in the same habitat as the preceding in Trinidad and Panama. I have also specimens from Peralta, Costa Rica, March 25, 1910 (P. P. Calvert).

Decamyia eloisa Howard, Dyar & Knab.

Wyeomyia eloisa Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 6, fig. 36, 1912.

Wyeomyia eloisa Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iii, 121, 1915.

The larvæ occur in the flowers of *Calathea discolor* in Panama. I have received the species also from Surinam (Mrs. J. Bonne-Wepster).

Genus CALLADIMYIA, new genus

Type species: *Wyeomyia pandora* Dyar & Knab.

But a single species is known. The larvæ live in the fluid in the leaf-axils of *Calladium*. The species is widely distributed.

Calladimyia melanocephala Dyar & Knab.

Wyeomyia melanocephala Dyar & Knab, Proc. Biol. Soc. Wash., xix, 140, 1906.

Wyeomyia canfieldi Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 207, 1907.

Wyeomyia pandora Dyar & Knab, Smiths. Misc. Colls., Quart. iss., lii, 261, 1909.

Wyeomyia pandora Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 3, fig. 11, 1912.

Wyeomyia fauna Dyar & Knab, Ins. Ins. Mens., vii, 2, 1919.

There is some variation in the amount of white on the tarsal joints. In the single type of *melanocephala*, the white on the mid tarsi occupies not quite the apical half of the second joint. This is from Trinidad. In specimens from Rupununi, British Guiana (K. S. Wise), somewhat over half of the joint is white. In specimens from Paramaribo, Dutch Guiana (Mrs. Bonne-Wepster), fully two-thirds of the second joint is white, as occurs typically in *canfieldi* in Panama. In *pandora* the white does not completely encircle the last joint of hind tarsi, as stated, for even in the types, in the right light, a narrow line

of black scales can be seen running down the dorsal side of the fourth joint. This line is very narrow in these types and others, although commonly distinct, but it is not a specific character. In *fauna* the white becomes more extensive on the mid tarsi, occupying all of the second joint below and touching the tip of the first joint; but as the male genitalia are identical, I scarcely think that the form will be found to represent a distinct species.

Genus MENOLEPIS Lutz

Menolepis Lutz, in Peryassú, Os Culic. do Brasil, 303, 1908.

Type species: *Wyeomyia leucostigma* Lutz (in Bourroul, Mosq. do Brasil, 67, 1904).

The male of the type species is unknown to me. I take the characters from *albosquamata* Bonne-Wepster & Bonne, found in Bromeliaceæ. *M. leucostigma* is reported as breeding in water at the leaf-bases of *Typha*.

TABLE OF SPECIES

(Coloration)

1. Prothoracic lobes blue *leucostigma* Lutz
- Prothoracic lobes dark like mesonotum
- ALBOSQUAMATA Bonne-Wepster & Bonne

Menolepis albosquamata Bonne-Wepster & Bonne (Pl. V, fig. 10).

Wyeomyia albosquamata Bonne-Wepster & Bonne, Ins. Ins. Mens., vii, 107, 1919.

Larvæ found in Bromeliaceæ along the Lawa River, Surinam, by Mrs. J. Bonne-Wepster and Dr. C. Bonne.

Genus DODECAMYIA, new genus

Type species: *Wyeomyia aphobema* Dyar.

TABLE OF SPECIES

(Coloration)

1. Colors of the abdomen separated on the sides in a straight line 2
- The black color incised by the ventral white on the anterior angles of the segments.....SPLENDIDA Bonne-Wepster & Bonne

2. Mid tarsi white-marked; hind darkAPHOBEMA Dyar
Mid tarsi dark; hind white-markedCLASOLEUCA Dyar & Knab

(*Genitalia*)

1. A tuft of spines on the side piece near middle....*aphobema* Dyar
This tuft on the side piece at the apex
splendida Bonne-Wepster & Bonne
Side-piece without tuft of spines.....*clasoleuca* Dyar & Knab

Dodecamyia aphobema Dyar (Pl. V, fig. 11).

Wyeomyia aphobema Dyar, Ins. Ins. Mens., vi, 120, 1918.

Wyeomyia aphobema Bonne-Wepster & Bonne, Ins. Ins., Mens., vii, 114, 1919.

Bred from Bromeliaceæ by Mrs. Bonne-Wepster in Surinam.

Dodecamyia splendida Bonne-Wepster & Bonne (Pl. V, fig. 12).

Wyeomyia splendida Bonne-Wepster & Bonne, Ins. Ins. Mens., vii, 111, 1919.

Bred from Bromeliaceæ by Mrs. Bonne-Wepster in Surinam.

Dodecamyia clasoleuca Dyar & Knab (Pl. V, fig. 13).

Wyeomyia clasoleuca Dyar & Knab, Proc. U. S. Nat. Mus., xxxv, 68, 1908.

Wyeomyia grenadensis Edwards, Bull. Ent. Res., vi, 363, 1916.

Described from two captured females, the life history unknown. I have two males, taken in the type locality, Caldera Island, Porto Bello Bay, Panama, January 4, 1908 (A. H. Jennings), and Porto Bello, Panama, November, 1913 (E. Martini), which quite plainly belong here.

Genitalia. Side pieces short and rounded, the clasp simple, very thick, and about as long as the side piece, the tip pointed and with a row of setæ on each margin. Harpes large, prominent, toothed. Basal appendages stout, on an angular articulated piece resembling a jaw, each with four long spines, which are clawed at the end.

Mr. Edwards' *grenadensis* rests solely on the locality, no differences being shown to exist. The male of *grenadensis* is

unknown. If it is found to differ the name will be resurrected from the synonymy.

Genus LEMMAMYIA, new genus

Type species: *Limatus methysticus* Dyar & Knab.

Only a single species is autoptically known to me.

Lemmamyia methysticus Dyar & Knab.

Limatus methysticus Dyar & Knab, Smith. Misc. Colls., Quart. iss., lii, 266, 1909.

Limatus methysticus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 2, fig. 5, 1912.

I have the species only from Costa Rica and Panama, but it must be more widely distributed. *Dendromyia asullepta* Theobald (Mon. Culic., iii, 315, 1903), from British Guiana apparently comes close and may be the same. Mr. Jennings bred *methysticus* from larvæ in a palm-spathe lying on the ground.

I think this will prove to be the same as *Wyeomyia hemisagnosta* Dyar & Knab (Journ. N. Y. Ent. Soc., xiv, 230, 1906). That species was described from larvæ in cacao shells from Salvador and Costa Rica; *methysticus* from captured adults from Costa Rica. The association seems entirely probable and the breeding habits are consonant. It is to be noted that the species breeding in dead tissues, such as cocoanut-husks and bamboo, are widely distributed, whereas those breeding in living tissues, such as Bromeliaceæ, are restricted in distribution. Therefore, I think this a widely distributed form and that *asullepta* Theobald will prove the earliest name, with *hemisagnosta* D. & K. and *methysticus* D. & K. as synonyms.

Genus HYSTATOMYIA, new genus

Type species: *Wyeomyia circumcincta* Dyar & Knab.

TABLE OF SPECIES

(Coloration)

1. Female with the tarsi all dark; male with front and mid tarsi marked with white 2
- Male with the mid tarsi only white-marked. INTONCA Dyar & Knab

2. Mid tarsi of the male encircled by white

CIRCUMCINCTA Dyar & Knab

Mid tarsi of male bright brassy below

CÆNONUS Howard, Dyar & Knab

(Genitalia)

1. Clasp filament long with pointed tip; one large basal hair-tuft on side piece.....cænonus Howard, Dyar & Knab
Clasp small; two large basal hair-tufts, the inner with curved, thickened filamentscircumcincta Dyar & Knab
Clasp with rather long expanded tip; three basal hair-tufts and a fourth, more diffuse, at insertion of clasp, intonca Dyar & Knab

Hystatomyia circumcincta Dyar & Knab (Pl. V, fig. 14).

Wyeomyia circumcincta Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 210, 1907.

Wyeomyia macrotus Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 212, 1907.

Wyeomyia andropus Dyar & Knab, Proc. U. S. Nat. Mus., xxxv, 68, 1908.

Wyeomyia circumcincta Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 6, fig. 37, 1912.

The larvæ occur in Bromeliaceæ in Panama, as described in the monograph. The figure in the monograph does not show the hair-tufts correctly. I redraw it.

Hystatomyia intonca Dyar & Knab (Pl. V, fig. 15).

Wyeomyia intonca Dyar & Knab, Proc. Wash. Ent. Soc., xi, 173, 1910.

Bred from Bromeliaceæ in the Canal Zone, Panama, by Mr. Jennings.

Hystatomyia cænonus Howard, Dyar & Knab.

Wyeomyia cænonus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, pl. 6, fig. 38, 1912.

Wyeomyia cænonus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iii, 153, 1915.

The larvæ occur in the flower bracts of *Calathea discolor*, in Panama, as mentioned in the monograph.

Genus PROSOPOLEPIS Lutz

Prosopolepis Lutz, Imp. Med., 312, 1905.

Type species: *Prosopolepis confusus* Lutz.

This genus may fall with the *Joblotia* group, as placed in the monograph, but I think more probably it belongs here in the *Sabethes* group, as placed by Lutz and Peryassú. No males are known in the genus.

TABLE OF SPECIES

(Coloration)

1. Scales on clypeus white *confusus* Lutz
Scales on clypeus dark brown 2
2. Larger species, legs extended 11.5 mm. *jocosa* Dyar & Knab
Smaller species, legs extended 8.5 mm. *prolepidis* Dyar & Knab

In the tables of species I have let all those of which I do not know the males stay where they were. This has thrown all but two of the species with violet lobes into *Dendromyia* and all those with dark prothoracic lobes into *Wyeomyia*. This gives twenty species of *Dendromyia* with only five known in the male, and twenty-eight species of *Wyeomyia* with twelve known in the male. I cannot do anything else with them until the males are known. I fancy that a certain proportion will prove to be synonyms. The colorational characters as used are really perfectly good; but they are so hard to see and a small range of variation alters them so considerably, that mistakes are more than easy to make. That there are many still undiscovered mistakes in the tables, I make no doubt.

The following species I have not been able to place, even approximately.

Phoniomyia pallidoventer Theobald, Mon. Culic., iv, 598, 1907. Brazil.

Phoniomyia quasilongirostris Theobald, Mon. Culic., iv, 598, 1907. Brazil.

Dendromyia medioalbipes Peryassú, Os Cul. do Brazil, 303, 1908. Brazil.

Dendromyia arthrostigma Peryassú, Os Cul. do Brazil, 306, 1908. Brazil.

Dendromyia bourrouli Peryassú, Os Cul. do Brazil, 307, 1908. Brazil.

NEW SPECIES OF ERIOPTERINE CRANE-FLIES FROM THE UNITED STATES

(*Tipulidæ*, *Diptera*)

By CHARLES P. ALEXANDER

Ormosia bifidaria, new species.

Closest to *O. fumata* (Doane); antennæ dark throughout; thorax clear gray; gonapophyses of the male hypopygium slender, each with a deep apical notch.

Male.—Length, 4.5–4.8 mm.; wing, 5.5–5.8 mm.

Female.—Length, 6–6.3 mm.; wing, 6.8–7.3 mm.

Rostrum and palpi dark brown. Antennæ dark brownish black throughout. Head light brownish gray.

Mesonotum gray without distinct stripes. Pleura clear blue-gray. Wings subhyaline or with a faint gray tinge; stigma brown; small indistinct clouds along the cord and outer end of cell 1st M_2 ; veins dark brown. Venation: Cell 1st M_2 closed; basal deflection of Cu_1 just beyond the fork of M ; 2nd *Anal* vein strongly sinuate.

Abdomen dark brown; hypopygium bright yellow. Male hypopygium with the pleurites stout. Outer pleural appendage broad, expanded outwardly, flattened, the outer margin concave, heavily chitinated and minutely denticulate. Inner pleural appendage a flattened yellowish lobe. Penis-guard at its apex split into two strongly divergent horns. Gonapophyses slender, straight, each with a deep V-shaped apical notch.

The female is generally similar to the male but is conspicuously larger; the ovipositor is bright reddish yellow, shiny.

Habitat.—Colorado.

Holotype, ♂, Platte Canyon, altitude 10,000 feet; August 21, 1915 (E. J. Osler).

Allotopotype, ♀.

Paratopotypes, 2 ♂'s, 6 ♀'s.

Type in the collection of the author.

O. bifidaria is closest to *O. fumata* (Doane) which differs in having the basal antennal segments pale, the coloration not clear gray, and in the very different structure of the gonapophyses of the male hypopygium.

Ormosia serridens, new species.

Closest to *O. meigenii* (O. S.); gonapophyses of the male hypopygium minutely serrate.

Male.—Length, 3.8–4 mm.; wing, 4.5–4.8 mm.

Similar to *O. meigenii* in most respects. Average size smaller; male hypopygium conspicuously different in structure. The inner pleural appendage has a long lateral bill-like point so the appendage appears somewhat like the head of a bird. Lateral gonapophyses broad, of nearly equal width throughout, the apex obliquely truncated and with about a dozen minute teeth in addition to the small apical point. Inner apophyses slender, slightly curved, the outer margin minutely serrulate, the teeth decreasing in size from the base outwardly, apical point small.

Habitat.—Maryland, Virginia.

Holotype, ♂, Great Falls, Virginia, April 20, 1916 (W. L. McAtee).

Paratopotype, ♂; *paratype*, ♂, Cabin John Bridge, Maryland, April 11, 1915 (R. C. Shannon), ♂, April 13, 1916 (W. L. McAtee).

Type in the United States Biological Survey collection.

Ormosia dentifera, new species.

Coloration gray; wings with a faint grayish tinge; cell 1st M_2 open, anal veins nearly divergent; gonapophyses of the male hypopygium produced into powerful curved horns.

Male.—Length about 3.8 mm.; wing, 4.3 mm.

Female.—Length about 3.8–4 mm.; wing, 4.6 mm.

Antennæ moderately elongated, the scape brown, the flagellar segments in the male elongate-oval, black, with a conspicuous white pubescence; in the female, the flagellar segments are oval. Head gray.

Pronotum brownish gray, the lateral margins dull yellow. Mesonotum gray without distinct stripes. Pleura gray. Halteres rather long, pale yellow, the knobs a little darker. Legs with the coxæ, trochanters, and bases of the femora dull yellow, remainder of the legs dark brown. Wings with a faint grayish tinge, the stigma darker, brownish; veins brown.

Venation: Sc_1 ending just beyond r ; outer deflection of M_3 lacking; basal deflection of Cu_1 just before the fork of M ; 2nd Anal vein sinuous on its terminal half, at its extreme apex bent slightly toward the first anal vein, the first anal cell widest at the margin.

Abdomen dark brown, the genital segments brighter. Male hypopygium with the pleural appendages small, subequal in shape and size, narrowed to the obtuse apex, the outermost pale with a few small apical setæ, the inner appendage blackened. Gonapophyses powerfully developed, in the form of a black, chitinized, curved horn on either side, the horn of the right side with a single strong tooth at about midlength, the left horn with a broad tooth that is minutely bifid at its tip. This may vary in different specimens.

Habitat.—Maine.

Holotype. ♂, Orono, Penobscot County, June 5, 1913 (C. P. Alexander).

Allotopotype, ♀, June 8, 1913.

Paratopotypes, 3 ♀'s, June 5–10, 1913.

O. dentifera has no close relative in eastern North America. Superficially it resembles *O. deviata* Dtz. but is readily told by the coloration and the very distinct male genitalia.

***Ormosia adirondacensis*, new species.**

Close to *O. bilineata* Dtz.; coloration reddish gray, the mid-dorsal area slightly darker; wings faintly grayish; outer deflection of M_3 lacking, anal veins divergent.

Male.—Length, 4–4.2 mm.; wing, 4.7–5 mm.

Rostrum and palpi dark brown. Antennæ moderately elongated, brown, the flagellar segments with conspicuous, white, outspreading hairs. Head dark.

Pronotum brown, the posterior and lateral margins conspicuously light yellow. Mesonotal præscutum reddish gray, the mid-dorsal area darker brown, some specimens showing indistinct shorter lateral stripes of the same color. Pleura brownish yellow, gray pruinose. Halteres yellow. Legs with the coxæ brownish yellow; trochanters yellow; remainder of the legs light brown. Wings with a faint grayish tinge, the

stigmal region conspicuously darker; veins stout. Venation: r inserted on R_2 at about its own length beyond the fork of $R_2 +_3$; petiole of cell M_2 subequal to or about one-half longer than the basal deflection of Cu_1 , which is inserted immediately before the fork of M ; anal veins divergent, the second anal vein just before its tip bent slightly toward the first. The holotype has an adventitious crossvein in cell R_3 of the left wing.

Abdomen dark brown, the hypopygium brighter colored, especially beneath. Male hypopygium with the pleurites rather stout. Outer pleural appendage a small, flattened, black lobe whose outer face is minutely roughened, at the base on the inner margin with an obtuse lobe; inner pleural appendage a little longer, yellowish, the apex obtuse, before the tip with a small, slender, cylindrical projection. Penis-guard elongate, slightly sinuous, projecting conspicuously beyond the genital chamber. Gonapophyses slender, acute, curved slightly proximad. Eighth sternite with a conspicuous flattened median lobe as in the *meigenii* group.

Habitat.—New York (Fulton County, Southern Adirondack Mountains).

Holotype, ♂, Simmons Woods, Gloversville, altitude 900 feet, June 22, 1916 (C. P. Alexander).

Paratypes, Woodworths Lake, ♂, June 17, 1916; ♂, July 7, 1916; Mountain Lake, 3 ♂'s, in balsam, June 17, 1914.

Type in the collection of the author.

O. adirondacensis is closest to *O. bilineata* Dtz. but is easily separated by the coloration, the course of the second anal vein and, especially, the structure of the male hypopygium.

***Ormosia stylifer*, new species.**

General coloration light yellow, the mesonotal praescutum without darker markings; wings nearly hyaline, the costal cells yellowish, the stigma indistinct; outer deflection of M_3 lacking, cell 1st M_2 being open; anal veins divergent; gonapophyses of the male hypopygium elongate, stylet-like; eighth sternite greatly produced, deeply notched medially.

Male.—Length about 3.3–3.5 mm.; wing, 4.7–5.2 mm.

Rostrum brownish yellow; palpi dark brown. Antennæ with the first scapal segment yellowish, the remainder of the antennæ dark brown; the second scapal segment appears flattened, disk-like, in the material at hand. Head light yellow, the vertex brownish medially.

Mesonotal praescutum light yellow, the usual interspaces represented by broad, very faint and indistinct, reddish lines that broaden out on the sides of the sclerite. Pleura yellowish. Halteres pale with dark brown knobs. Legs with the coxæ and trochanters yellowish; femora yellowish with the tips dark brown, these broadest on the fore legs, narrowest on the hind legs; tibiæ and tarsi brown. Wings almost hyaline, the costal cells more yellowish; stigma indistinct; veins brown. Venation almost as in *O. deviata* Dtz., the *r-m* crossvein longer and more arcuated.

Abdominal tergites yellow, the basal tergites indistinctly brownish medially, the sternites more yellowish. Male hypopygium reddish, similar in structure to *O. deviata* Dtz. of the eastern United States, but the apices of the lobes of the eighth sternite are more pointed, and the outer pleural appendage distinctly narrowed to the somewhat pointed apex. The gonapophyses are produced beyond the genital chamber as slender, stylet-like rods that emerge just beneath the ninth tergite.

The female is very similar to the male but larger.

Habitat—Oregon.

Holotype, ♂, Forest Grove, Washington County, June 3, 1918 (F. R. Cole).

Allotopotype, ♀.

Paratopotypes, 2 ♂'s.

Type in the collection of the author.

O. stylifer is closest to *O. deviata* Dtz. with which it agrees in the structure of the eighth sternite and gonapophyses of the male hypopygium. *O. deviata* is, in all respects, a much darker colored fly.

***Cladura oregona*, new species.**

Coloration light yellow, the mesonotum opaque; tips of the

femora and tibiæ scarcely darkened; wings grayish, more yellowish basally and along the costal region.

Male.—Length about 5.5 mm.; wing, 7.4 mm.

Rostrum light yellow with a sparse white bloom; palpi yellow basally, the two terminal segments and the apical half of the second brown. Antennæ with the basal segments yellowish, the last twelve segments brown; there are twelve elongate flagellar segments beyond the small fusion segment. Head dark gray.

Thorax opaque, yellow, without markings. Pleura a little more whitish. Halteres light brown, the knobs a little darker. Legs with the coxæ and trochanters light yellow; femora and tibiæ a little more brownish, the tips of the former very slightly darkened; tarsi dark brown except the basal half of the metatarsi which are more yellowish. Wings pale gray, unmarked, the base of the wings, the costal region, and along vein *Cu* more yellowish; stigma indistinct; veins brown. Venation: Almost as in *C. flavoferruginea*; *Rs* a little longer and not so arcuated at its origin; basal deflection of $R_4 +_5$ very reduced; *r-m* long, angular; cell 1st M_2 smaller; cell M_1 deeper.

Abdomen light yellow, the mid-tergal region brown; eighth and ninth segments darkened to form a subterminal ring. Male hypopygium as in *C. flavoferruginea*, the pleural appendages long and slender, a little enlarged and curved at their apices.

Habitat.—Oregon.

Holotype, ♂, Forest Grove, Washington County, September 30, 1918 (F. R. Cole).

Type in the collection of the author.

C. oregona is a well-defined species that differs conspicuously from *C. flavoferruginea* O. S., its closest relative, by the uniformly gray wings and structure of the male hypopygium. In general appearance it is very like *Crypteria americana* Alex., likewise from Oregon, but is readily told by the generic characters.

THE LARVA OF XANTHOPASTIS TIMAIS CRAMER AGAIN

(*Lepidoptera, Noctuidæ*)

By HARRISON G. DYAR

I have shown that the larva of this species varies locally to a marked degree (*Ins. Ins. Menstr.*, i, 20, 49, 1913), and I indicated four forms from the Antilles, Dutch Guiana, Mexico, and Florida, respectively. Larvæ from Panama are now before me. A different form from any described is shown and this may not be surprising; but it is distinctly unexpected that it should be of the Antillean insular type with large tubercles and not of the continental smooth form. Such, however, is the case.

Xanthopastis timais Cramer, **molinoi**, new larval form.

Head orange-red with a large black spot on each lobe at seta ii; another spot over ocelli; bases of antennæ and labrum whitish. Body tubercles large and black with coarse setæ; color blackish or dark gray; cervical shield orange with large black spots, one on each side of the dorsal line being especially large; anal shield almost wholly black, having only an orange spot in front and slender subdorsal line on each side; body with rows of pale yellow spots, appearing as a broken dorsal line and more nearly continuous subdorsal one, with spots between and on the sides, rather indistinctly forming four transverse rows of spots, the posterior row on each segment slightly but distinctly enlarged; leg-shields blackish.

Larvæ on lilies, Ancon, Canal Zone, Panama, January 14, 1919 (J. Molino).

A NEW SUBGENUS OF CULEX LINN

(Diptera, Culicidæ)

By HARRISON G. DYAR

Mrs. J. Bonne-Wepster kindly gave me a new species of *Culex* which does not agree with any of the tropical subgenera known to me. It may possibly belong to *Aedinus* Lutz, described from Brazil, but the male structure of this is unknown to me.

Culex (**Eubonnea**, new subgenus) **tapena**, new species.

Male. Antennæ plumose, the last two joints long and ciliate. Palpi short, about one-sixth as long as the proboscis, slender. Proboscis appearing jointed at the outer third, blackish. Mesonotum bronzy brown, with curved dense short spiny hairs, no scales; a double impressed paler brown dorsal bare line. Abdomen black, with dorsal basal segmental narrow whitish bands. Legs bronzy black, the femora paler below toward base, without white. Wing-scales rather broadly oval.

Genitalia. Side pieces about three times as long as wide, excavate at base; a long stout arm near middle, bearing a short thick tapered spine, bent a little toward base; beyond are eight stout setæ, two of which are large and blade-shaped. Clasp-filament narrowed in the middle, expanded at tip, emarginate, almost cleft, one side lip-like, the other slender, tapered, with articulated subterminal spine. Harpes comb-shaped, with six distinct teeth. Unci reduced, the first plate small, triangular, the second straight, pointed, constricted toward base. Basal lobes long, finger-shaped and joined together on a bridge, the tips bluntly rounded, and bearing two rows of small setæ arising from tubercles.

Type, male, No. 22623, U. S. Nat. Mus.: Paramaribo, Surinam, January 5, 1919 (Mrs. J. Bonne-Wepster), captured indoors at 7 p. m. Another specimen was bred from a pupa in a permanent pool with much vegetation, December 5, 1918.

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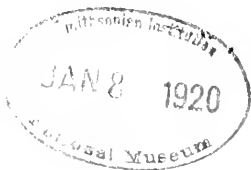
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NEW SIBERIAN CULICIDÆ

(*Diptera*)

By C. S. LUDLOW¹

Among the specimens of mosquitoes sent by the Surgeons of the American Expeditionary Force in Siberia are some which, though closely allied to forms found in Alaska and the north-western United States, are apparently new, and are described below.

Culiseta siberiensis, new species.

Female: Head dark brown with large greyish white curved scales, a line of more slender ones around the eyes, brown forked scales on the occiput, and a few brown, and more white flat scales on the sides, brown bristles; antennæ dark brown, pubescence white, verticels dark brown, basal joint brown with a well formed crown of brown and dirty white rather slender flat scales, second and third joints with a few of the whitish scales; proboscis dark, covered with dark brown scales with a few whitish ones intermixed, especially on the more proximal portion, the apical third dark, labellæ dark; palpi dark covered with dark brown scales and some admixture of the whitish scales, especially at joints; clypeus dark brown, pruinose; eyes reddish brown.

Thorax: prothoracic lobes widely separated, dark, thickly covered with large greyish white curved scales and brown bristles; mesonotum very dark brown heavily covered with almost black and some yellowish and greyish white large curved scales, the latter tending to form a vague pattern, a

¹ Contribution from the Army Medical Museum, Washington, D. C.

group of the greyish white at the nape, on the shoulders, near the wing joints, and around the "bare space" almost forming a submedian line on either side, on some specimens a faint ill defined submedian light spot on either side, brown bristles mostly confined to the lateral margins. The yellowish scales are scattered through the brown ones on the middle portions of the mesonotum; scutellum dark, covered with the greyish white scales and heavy dark brown bristles grouped on the margins of each lobe; metanotum light brown, nude with a dark median line; pleura brown, heavily clothed with white long flat scales and long light hairs.

Abdomen dark, covered with very dark brown almost black scales, and narrow white bands which on the third and following segments broaden so as to form basal white lateral spots. A few white scales are scattered throughout the brown ones on some segments. The first segment has two submedian white spots and many light hairs, the second segment has a median narrow light line extending from the base to the distal margin, the following segments have narrow basal white bands not always complete, and widened to form the lateral spots, the eighth segment largely, in some specimens entirely, white scaled; venter light scaled, the membrane showing through somewhat darker in some specimens.

Legs: coxæ light brown, rather heavily clothed with white scales and fine long hairs; trochanters with some brown scales; femora covered with dark brown and white scales intermixed, the ventral aspect lighter almost to the apex, more marked on the hind legs, of which the ventral aspect is almost white, a tiny light knee spot; tibiæ also with dark and light scales intermingled, a ventral light line and very narrowly light at the apex; the first tarsal joint on the fore legs, darker, a minute basal light spot and a line of white scales that reaches nearly to the apex, which is dark, second and third tarsal joints have small basal light bands, reduced to a mere dot on the fourth, and the fifth is wholly dark. On the mid-legs the first tarsal joint shows a very narrow light line, not extending the whole length of the joint, the second, third, and fourth tarsals basally

light, fifth dark. The hind legs have the light line more markedly developed than on the other legs, the basal band on the second, third and fourth joints much more marked, and there are sometimes a few light scales at the base of the fifth. Ungues simple on all the legs.

Wings: clear, yellowish, slightly infuscated at the base of the second long vein, and at the cross veins. The scales are mostly brown, a slight admixture of white on the costa and first long vein where the scales are truncate, while on the remainder of the veins the scales are long lanceolate, rather narrow and a dark brown, the lateral scales being especially long and narrow. There are aggregations of scales forming five distinct spots, one at the base of the forks of second, fourth, and fifth long veins, one at the root of the second long vein, and one at the cross veins. The spot at the fork of the fifth vein is very distinct though small, on well scaled wings, but becomes more or less indefinite with the denuding of the wing. The first submarginal cell is longer and narrower than the second posterior, its petiole about half the length of the cell, and practically equal to that of the second posterior; cross veins nearly of one length, almost in a line, and heavily scaled on the distal side. The halteres have light stems and dark brown knobs. On the ventral side of the wing near the root of the first long vein is a heavy bunch of long hairs or slender bristles.

Length about 10.5 mm. (body 7 mm., proboscis 3.5 mm.), wing about 6 mm.

Taken, July 8-25, 1919, at Mostovoi, Selenga, and Verkhne Udinsk, Siberia.

Described from twenty-four females sent by the Surgeons at these posts. Apparently it lies nearest to *C. alaskaënsis* to which species I referred it originally, but additional specimens, and further study leads me to believe it to be distinct, the most marked difference being the fifth wing spot at the fork of the fifth long vein; otherwise the differences are small, but it was interesting to find so nearly related a species on the Asiatic side of the Pacific.

Aëdes grahami, new species.

Female: Head brown covered with small curved, forked and flat scales; a median stripe of white curved scales, long slender scales at the vertex and white forked scales on the occiput broadening so as to form a triangular spot, base caudad; immediately laterad is a stripe of golden, or golden brown curved scales, forked scales of the same brilliant color at the occiput, flat brilliant brownish scales at the sides, brown forked scales extending well around to the sides; antennæ brown, the proximal joints lighter than the more distal, basal joint a chestnut brown with a thick crown of flat white scales, on the median and dorsal aspect the base of the second joint pruinose with a few dark flat scales, verticels short, rather scanty, dark, pubescence white; proboscis dark, covered with dark and white scales scattered throughout, the base and apical fourth darker, having very few white scales, labellæ dark; palpi dark, covered with dark and white scales intermixed, and a few brown bristles; clypeus dark brown, pruinose; eyes brown to reddish.

Thorax: prothoracic lobes well separated, covered with small slender golden, and broad white curved scales, and many dark bristles; mesonotum dark brown closely covered with golden and silver-grey small curved scales arranged in definite pattern. There are of the golden scales a broad median stripe beginning near the nape, gradually narrowing and extending to and on the "bare space," two short narrow stripes, beginning about one-third caudad of the nape, apparently branching from the broader stripe, but running parallel to it, and extending nearly to the "bare space," and laterad of these a broad somewhat clublike stripe on either side beginning about the middle of the mesonotum and extending to the scutellum. The shoulders and lateral margins are covered with brilliant brownish scales, and the rest of the mesonotum is covered with the small silvery grey curved scales, which grow larger near the scutellum, and a bunch of these larger grey scales occurs across the mesonotum at the nape. Here are two short denuded places suggesting the

dark line found in some other species and showing the dark brown (black) of the integument. A few brown submedian bristles near the caudad portion, and some white scales and a bunch of bristles, some white and a few brown, occur at the wing joint. The scutellum is brown, with a median bunch of the golden curved scales near the base of the midlobe, otherwise it is covered with the larger white curved scales; the marginal bristles are missing. The metanotum is a soft brown, pruinose; the pleura also a soft brown, irregular in color, rather completely covered with white flat longish scales and bunches of white bristles.

Abdomen dark; first segment covered with white scales and white bristles, the other segments have narrow basal and apical bands, a well developed white median stripe, and white lateral spots, developed into a lateral stripe, so that the dark scales appear as dark submedian spots, growing narrower on the more distal segments but still small distinct spots even on the ultimate segment. The venter is mostly white scaled, but some dark median scales, better developed as median spots, occur on the more terminal segments.

Legs: coxæ and trochanters testaceous, heavily covered with white scales and bristles, the latter appearing white or brown according to the direction of the light; femora all light, covered with black and white scales, rather evenly distributed on the forelegs, the white more predominant on the mid and hind legs, ventrally white, almost or quite to the apex, the fore leg with an unusually large number of bristles, especially near the apex, small white knee spot; tibiæ all speckled, perhaps a little lighter than the femora, a white line nearly the whole length of the joint, more marked on the hind legs, very narrow basal and apical white bands; first tarsal on the fore legs are dark dorsally, narrow basal and apical white bands, and ventrally light, mid legs have the first tarsal darker than the tibiæ, with a few light scales, and basal and apical light bands; on the hind legs the first tarsal is speckled, has a dark bend near the apex, and basal and apical light bands. The second tarsal joints on the fore and mid legs are dark with basal and

apical light band, on the hind legs they are dark, with a narrow light line, and basal and apical bands. The third tarsals on all the legs are dark, with basal white bands, but the apical bands on the fore legs are lacking or reduced to a few white scales, on the mid legs they are represented by a few white scales, and on the hind legs show only a narrow white apical band. The fourth and fifth on the fore legs are dark, on the mid legs are dark, with narrow basal white bands, and a few white scales at the apex, more marked on the ventral side, on the hind legs the fourth tarsal is dark with basal and very narrow apical white bands, the fifth joint is entirely white. All the unguis uniserrate.

Wings pale, largely white scaled; the costa almost entirely white scaled to near the junction of the subcosta, a few dark scales distad to this; the subcosta is also largely white scaled, but there are a few dark scales intermixed; the first long vein is light scaled near the root but otherwise rather evenly mixed throughout its length; second long vein practically white scaled to the forks, then the lateral scales are dark on both forks, and a dark spot at the tip of each; the third vein is entirely dark scaled, only the ventral scales being white; it is carried toward the root of the wing by a well marked incrassation. The stem of the fourth vein is entirely white scaled, with the exception of a few dark scales near the fork of the fifth, till the fork, both branches of which are dark scaled, except the ventral scales which are white; the fifth vein is dark scaled throughout, except the ventral scales, which are white; the sixth vein is white scaled, with an occasional dark scale. The wing fringe is largely white but the border scales are dark. The first submarginal is a little longer than the second posterior, its stem a little more than half the length of the cell, that of the second posterior a trifle shorter. The basal cross vein about double its length distant. The halteres are light, very fragile looking and covered with white scales.

Length: body about 9 mm., proboscis 4 mm., wing 5.5 mm.

Male: The general coloring is much as in the female. The head is mostly covered by white curved flat and forked scales,

a few yellow curved and forked scales, and some brown forked scales on the very edge of the occiput. The basal joint of the antennæ is brown, with white flat scales, the verticels very full, long and yellow, a dark band at the base of each whorl, the terminal joints dark with light yellow or white pubescence, and a few brown bristles; the proboscis is more definitely white scaled in the middle than in the female; palpi long, a broad black basal band, followed by a wide white band reaching nearly to the apex of the joint, a rather narrow black band involving both sides of the joint, followed by a broad white band extending about two-thirds the length of the penultimate, which here becomes thickened, and some black scales with blue iridescence, and a few yellow scales are found especially on the dorsal aspect, the very apex is dark, the penultimate joint is covered with dark, white and yellowish flat scales and a heavy plume of long yellow hairs and a few white bristles near the apex, the ultimate joint has black and light scales, the plume is not so heavy, and is mostly white. The thoracic marking is like that of the female. On the abdomen the submedian dark spots are well developed, but the terminal segments are mostly white, and the median dark line on the venter is much more pronounced. The ungues are large, on the fore leg the larger is biserrate, the smaller uniserrate; on the mid legs they are still unequal, and both are uniserrate; on the hind legs the ungues are equal and uniserrate. The wing is scantily scaled, but the general coloring of the female is suggested; the second posterior cell is much broader than the first submarginal, stem also a little shorter; cross vein distant a little more than its length. The incrassation of the third vein is more marked than in the female.

Length: body 8.5 mm., wing 5 mm.

Dr. Harrison G. Dyar, of the U. S. National Museum, has kindly examined and compared the male genitalia for me, and corroborates by the genitalic characteristics my conclusions from the somatic differences. His report follows:

"Side pieces about three times as long as wide, uniform, the tip rounded; clasp with long terminal spine; apical lobe low,

parallel to the side piece and similarly haired; basal lobe quadrately expanded, densely tubercular, with moderate setæ; a stout spine with hooked tip on the lower margin and a shorter straight one above the middle of the side margin. Harpago with short stout hirsute stem, a seta at base and two before apex; filament thickly fusiform, short, pigmented. Harpes normal; unci membranous. Basal appendages short with four or five terminal spines.

"As compared with *dorsalis* Meigen of western Europe, to which this species is allied, the two spines on the basal lobe of the side piece are much more remote. They are also more remote and differently placed from the corresponding spines in *currici* Coq., the North American representative. I consider the species distinct on genitalic characters."

Taken, the male at Mostovoi, July; the female at Vladivostok August 5, 1919.

Described from one female and one male in excellent condition sent in the collections made by the Surgeons of the American Expeditionary Force, Siberia. The male was taken at Mostovoi early in July by Major R. E. Graham, M. C., U. S. Army, the female was taken at the Emergency Hospital, Vladivostok, August 5. Although the collections from Siberia have been received in excellent condition, and contained many specimens, these are the only two of this species, none of those belonging to the more or less closely allied forms showing the brilliant thoracic markings.

***Aedes cyprius*, new species.**

Female: Head brown, covered with yellowish white broad curved scales over the vertex and occiput, and extending well around to the sides, a few flat scales at the side, and a few slender forked scales at the nape; antennæ yellowish on the proximal joints, dark brown on the more distal, basal joint deep yellow and brown with white flat fragile looking scales, second joint yellow, apparently somewhat swollen, verticels dark, pubescence light, the distal joints dark; proboscis yellow, covered for the most part with thin yellowish or white scales and fine short brown hairs, a few dark brown scales near the

base and the distal part (about one-eighth the length of the proboscis) very dark; labellæ dark; palpi about one-fourth the length of the proboscis, yellow, loosely covered with dark brown and thin whitish scales, and brown hairs, the effect being a mottled yellow and brown, the last joint short and dark; clypeus brown, pruinose, a row of minute hairs on the frontal margin; eyes reddish brown.

Thorax: prothoracic lobes lateral, yellow, covered with light glistening curved scales and light bristles; mesonotum yellow, a dark rich reddish brown band across the cephalic margin and a median line extending almost to the "bare space," covered with light yellowish-white glistening curved scales, smaller on the cephalad portion, larger toward the scutellum, many light bristles on the disk, a lateral row and a heavy bunch of them at the wing joint; scutellum markedly trilobed, light, covered by long glistening yellowish-white curved scales, such as are found on the mesonotum, and with very heavy marginal bristles showing three or even four rows; metanotum pale, yellowish, pruinose; pleura yellow with white flat long scales and light bristles.

Abdomen fawn colored, showing some tendency to banding in the integument. The scaling seems to vary, so that any general statement about one specimen may not be accurate for another. The first segment shows some white scales as a basal bunch of long scales, in some specimens slightly curved, otherwise the abdomen is closely covered with rather long flat yellow (ochraceous) scales, a few dark scales irregularly placed, segmental and terminal bristles yellow; laterally the scales are lighter and sometimes appear as indefinite light spots. The venter is mostly white scaled with some dark scales rather irregularly placed, and light hairs. As on the dorsal segments these ventral ones show some tendency to banding in the integument, but this apparently varies in the individual. The terminal segment is entirely light; cerci dark.

Legs as a whole are yellow with brown bands; coxæ and trochanters yellow, mostly white, and a few brown scales, the distal margin of the trochanters fawn colored; femora yellow

with thin white or yellowish white and a few brown scales, and many brown bristles, the ventral aspect light; brown bristles at the apex give a slightly darker appearance. Tibiæ much the same, ventrally light, and the apex is somewhat darkened by the dark brown bristles. The first tarsals are light, with narrow apical dark bands; second tarsals on fore and mid legs have narrow dark apical bands, which are a little wider (one-third the length) on the hind legs; all the third tarsals dark with apical bands, about one-third the length of the joint; fourth tarsals are also apically dark, at least one-half the length of the joint; the fifth tarsals are dark in the fore and mid and with only a narrow light band on the hind legs.

Ungues are all uniserrate.

Wings: yellow, clear, veins yellow, clothed with long "Taeniorhynchus" like scales mostly thin yellowish white or white with rich dark reddish brown scales intermixed, in both median and lateral scales, and some even in the fringe, but not so as to form definite spots. The ventral scales are apparently all white. The first submarginal cell is a little longer and nearly one-half narrower than the second posterior, its stem nearly as long as the cell, but the length of the cells and stems, and the length and position of the cross veins vary, the latter always at right angles to the veins, but the distances varying from the full length of the cross vein to less than half its length. The halteres are entirely light.

Length: body 8.5-9 mm., wing about 7 mm., proboscis, 3.5 mm.

Taken, Selenga, July 10, 20, 21; Vladivostok, August 5, Verkhne Udinsk, August 12, 1919.

Described from twenty-two females sent by the Surgeons with the American Expeditionary Force, Siberia, at these stations: Major R. E. Graham, M. C., U. S. Army, at Verkhne Udinsk; Major J. P. Truax, M. C., U. S. Army, Emergency Hospital, Vladivostok; First Lieut. J. Kopecky, M. C., U. S. Army, Selenga.

The insect as a whole is brilliantly copper colored and stands out conspicuously in a collection of other mosquitoes.

Some points of interest should be noted. In *Culiseta siberiensis* the bunch of long hairs on the ventral side of the wing near the root of the first long vein seems to be unusual. At all events it is the first time it has been noticed by me.

The subject of the vestiture of the clypeus will probably need further study, because, not only does this fine fringe of short hairs show distinctly in *Aedes cyprius*, but it also occurs, though less well marked, and not referred to in the description, in *Culiseta siberiensis*. This suggests that comparison with other forms in regard to this point is advisable so that some definition of length, position, etc., may be made to indicate its generic or specific value. There are, of course, forms where present knowledge leads us to expect this condition, but it was a great surprise to find it in those mentioned above.

DESCRIPTIONS OF HITHERTO UNKNOWN LARVÆ OF CULEX

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

Under the above title I described, in conjunction with Dr. Harvey P. Barret (*Ins. Ins. Menstr.*, vi, 119, 1918), the larva of *Culex peccator* D. & K. I am now able to add the description of another species, leaving only three larvæ unknown, namely, those of *anips* Dyar, *egberti* D. & K., and *pose* D. & K.

Culex (Choeroporpa) peribleptus Dyar & Knab.

Culex (Mochlostyrax) peribleptus Dyar & Knab, *Ins. Ins. Menstr.*, v, 181, 1917.

Culex (Mochlostyrax) peribleptus Dyar, *Ins. Ins. Menstr.*, vi, 108, 1918.

Head broad, the antennæ thickened, with a notch at the outer third, from which arises a large tuft; terminal spines long; head hairs, the upper a small tuft in fives, the lower a single long hair. Body pilose throughout, including the anal segment. Lateral comb of the eighth segment a patch of about 20 scales two rows deep, becoming single below. Air

tube straight or slightly curved, about eight times as long as the basal width, glabrous, the pecten running nearly to the middle. Tufts on the posterior margin appearing to be five in a straight row; in reality four pairs, the subapical pair displaced longitudinally; a small tuft anteriorly near the middle and another subapically, both inconspicuous. A pair of slender hooks at the tip of the tube anteriorly. Anal segment long and slender, a little narrowed at base, ringed by the plate. Tracheæ narrow, linear.

Larvæ: from Sibley, Mississippi, "taken from grass growing along the margin of a pond; I saw none in the open. The larvæ are rather sluggish and not easily alarmed. The pupæ are the reverse, and are very active." (Andrew Fleming.)

The larva resembles those of *erraticus* D. & K. and *peccator* D. & K., but the air-tube is somewhat shorter. The head is without the black spottings seen in *peccator*; the antennæ are paler at the base, but not white as in that species. The three are, however, very close and difficult to distinguish.

We originally placed the species in the subgenus *Mochlostyrax* on account of the male genitalia; but in fresh mounts prepared from Mr. Fleming's material, the shape seems rather to be that of *Choeroporpa*, and the larva is clearly a *Choeroporpa* and not a *Mochlostyrax*. I therefore change the subgeneric location. In my tables (Ins. Ins. Menstr., vi, 103-107, 1918), *peribleptus* may be erased on page 107 and inserted on page 104, where it will fall with *leprincei*, differing as follows:

Second uncal plate shallowly emarginate; basal appendages moderate, elliptical, oblique.....	<i>leprincei</i>
Second uncal plate deeply emarginate; basal appendages large, quadrate	<i>peribleptus</i>

NEW MOTHS FROM MEXICO

(*Lepidoptera*, *Noctuidæ*, *Hadeninæ*)

By HARRISON G. DYAR

Hydroeciodes compressipuncta, new species.

Thorax rufous and orange, mixed with brown; abdomen brown, the basal and apical tufts lighter. Fore wing orange,

irrorate with rufous, shaded with purplish brown on the outer half between the spots, subbasal line brown, dislocated on subcostal vein; inner line curved, narrow, brown, cutting the claviform, the inner segment of which forms a narrow orange lunule, the outer obsolete, a black spot at the apex; orbicular round, evenly margined with brown, no white; reniform contrasted in the purple shading, full, orange with dark shadings on inner half; three white dots below; traces of white on upper outer angle; subterminal line forming a large yellow blotch apically, then narrowed, rufous, forming between veins 2 to 5 narrow rufous spots edged without with blackish; a median dark line, angled at origin of vein 2. Hind wing blackish brown. Expanse, 25 mm.

Type, male, No. 22961, U. S. Nat. Mus.; Zacualpan, Mexico, May, 1919 (R. Müller).

Nearest to *H. anastagia* Dyar. The male antennæ are distinctly, though shortly serrate.

Hydroeciodes exagitans, new species.

Palpi with the hair in front longer than usual, but not as long as in *Stretchia*. Male antennæ with long pectinations. Thorax dark brown; abdomen blackish, the apical tuft light. Fore wing uniform brown, the inner and outer bands and stigmata lighter, with a yellowish tint, edged with fine black lines, but not at all contrasted; terminal space a shade darker. Orbicular round, small; reniform also small, with a blackish central shade; a dark shade along costa, with whitish specks toward apex; outer line slender, denticulate, forming the inner edge of the paler band; subterminal line forming the outer edge, less distinctly denticulate, inflexed at vein 5. Hind wing gray, lighter on the disk, with a faint discal spot. Expanse, 27 mm.

Type, male, No. 22692, U. S. Nat. Mus.; Mexico City, Mexico, June, 1919 (R. Müller).

Scriptania optima, new species.

Light brown over silvery white, the brown perhaps olive green when fresh. Cell narrowly silvery white; reniform and

orbicular brown filled, the reniform black-edged within, diffuse without; orbicular resting on median vein, along which a black line runs to the reniform; a white outer shaded band, diffusely denticulate and partly bordered with black, sending out a spur nearly to margin above vein 4 and running obliquely to apex; subterminal line white, narrow, black above. Hind wing pure white. Expanse, 29 mm.

Type, male, No. 22695, U. S. Nat. Mus.; Mexico City, Mexico, June, 1919 (R. Müller).

***Scriptania demerodes*, new species.**

Fore wing gray-white, largely overspread with blackish gray. Reniform, orbicular, a narrow shade along subcostal vein, spreading out on the venules, a broad shade on median vein, a narrow one on vein 1 and the terminal margin all white but without dark borders. A blackish line from submedian fold to vein 2, below base of vein 3 and between orbicular and reniform. Hind wing whitish, shaded with gray, especially along the margin; a small faint discal dot. Expanse, 27 mm.

Type, male, No. 22694, U. S. Nat. Mus.; Mexico City, Mexico, June, 1919 (R. Müller).

***Scriptania inquisita*, new species.**

Apex of fore wing rather sharp, the outer margin excavate slightly. Sordid white, with three large blackish specks along the costa and three smaller ones toward apex; inner margin broadly dark reddish, terminal space light purplish; a straight pale subterminal line from apex to vein 2, preceded by blackish cuneiform streaks between the venules, which are also blackish, radiating from a small discal dot at the lower corner of the cell. Hind wing translucent whitish with a gray tint, veins, terminal line and small discal dot darker. Expanse, 28 mm.

Type, female, No. 22696, U. S. Nat. Mus.; Mexico City, Mexico, April, 1919 (R. Müller). Another female, Real del Monte, Hidalgo, Mexico (gift of W. D. Kearfott).

DIAGNOSES OF NEW MOSQUITOES FROM SURI-
NAM, WITH A NOTE ON SYNONYMY*(Diptera, Culicidæ)*

BY J. BONNE-WEPSTER AND C. BONNE

Sabethes bipartipes Dyar and Knab.**Sabethes chroiopus** Dyar and Knab.

Male specimens of *Sabethes bipartipes* have never been found, neither females of *Sabethes chroiopus*. In July, 1919, we found some larvæ and pupæ in rather clear water, held by a fallen banana-leaf. From the larvæ we reared *Limatus cacophrades* Dyar and Knab and *Lemmamyia methysticus* Dyar and Knab; from the pupæ, five female *Sabethes bipartipes* and two male *Sabethes chroiopus*. This makes it very probable that *Sabethes bipartipes* and *chroiopus* represent females and males of one species, which shows sexual dimorphism in the coloration of the paddles.

Sabethoides imperfectus, new species.

Female. Proboscis long, slightly swollen at apex, black. Palpi one-seventh of proboscis, black. Antennæ moderate. Clypeus nude. Eyes large, contiguous at vertex. Occiput clothed with flat, shining violet and purple scales. Prothoracic lobes collar-like with blue flat scales. Mesonotum with green and coppery scales, lighter on the margins. Scutellum trilobate, vestiture similar to that of mesonotum. Postnotum without scales, four setæ on posterior end. Pleuræ and coxæ white. Abdomen short, compressed, dorsal vestiture bluish with irregular, basal coppery-white bands; the sides with blue and white scales intermixed, forming patches on the segments, venter pale golden. Wings rather narrow, infuscated; out-standing scales of veins elliptical, obliquely subtruncate. Legs slender, black, with coppery and violaceous reflections; mid tarsi with apex of second, all the third and all the fourth joint, except the tip white on one side. Claw formula: 0.0-0.0-0.0. Length: Body, 3.5 mm.; wing, 3 mm.

This species comes very near to *Sabethoides nitidus* Theob.; the proboscis is more swollen, the abdomen is much shorter,

there are more blue scales and more pure white scales forming lateral patches on the abdomen. We have *Sabethoides nitidus* also from Surinam, but compared with this species it is different. *Sabethoides imperfectus* could with almost equal right be called a *Sabethinus*, showing that these two ill-defined genera may not be held separate in the future.

Two females were captured while biting us in the woods.

Cotype, No. 22697, U. S. National Museum.

***Lemmamyia pseudomethysticus*, new species.**

We found larvæ of the three species of the old genus *Limatus*, but we bred four females from larvæ in fallen palm-leaves and tree-holes, which have all the characters of *Limatus durhamii* Theob.: First abdominal segment with golden scales, mid legs without white; the colors on the abdomen, however, are separated in a straight line as in *methysticus* Dyar and Knab. The hind legs have one claw only, of course. The larvæ come nearer to those of *methysticus* than to those of *durhami*. They have eight teeth on each side of the mental plate and the mandibles have four teeth, both as in *methysticus*; *durhami* has seven and five, so has *cacophrades*. *Limatus methysticus* D. & K. has been removed from the genus *Limatus* by Dyar and made the type of a new genus, *Lemmamyia* on genitalic characters. We take the risk, and place this new species in this same genus. Only further breeding can prove whether it belongs there or not.

Cotype, No. 22698, U. S. National Museum.

***Dendromyia roucouyana*, new species.**

Female. Proboscis moderate, swollen apically. Palpi short, one-fifth of the proboscis. Antennæ moderate. Clypeus nude. Occiput clothed with dark flat scales, a small white spot at the vertex, a large white patch at the under side of the head following the eye-margin for a short distance. Prothoracic lobes well separated, with dark scales with brilliant violaceous blue reflection. Mesonotum with broad elliptical brown scales with grayish violet reflection. Scutellum trilobate, vestiture as that of mesonotum. Postnotum with a group of setæ. Abdo-

men with the colors separated in a straight line. Outstanding wing-scales broadly elliptical, a few obliquely subtruncate. Legs with the mid-tarsi with more than half of the second joint, all of the third and fourth joint white on outer side and the fifth joint also with many white scales. Claw formula: 0.0-0.0-0.0. Length: Body, about 3 mm.; wing, 3 mm.

Larva. Body smooth; air-tube five times as long as wide with many single stout hairs and a tuft of four at the base; a false pecten of about eight teeth at the middle. Comb of eighth segment with about twelve very large spines in a single row, each spine sharply pointed.

We have only two females, bred from Bromeliaceæ in the Lawa district, March, 1917. We place the species in *Dendromyia* because of its resemblance to *Dendromyia smithii* Coq. and *mataea* D. & K. We do not generally describe females as types for new species in a difficult genus, but make an exception with this species which has such a characteristic larva.

Cotype, No. 22699, U. S. National Museum.

Cleobonnea argenteorostis, new species.

Female. Proboscis distinctly swollen at the tip, dark scales above, pale scales below; palpi short; antennæ moderate; margin of eyes with a narrow line of white, flat scales; occiput with dark flat scales, white on cheeks and underside. Prothoracic lobes clothed with flat white scales and dark bristles. Mesonotum clothed with appressed dark, bronzy brown elliptical scales with gray reflections, anterior margin silvery white. Scutellum with the coloration similar to that of mesonotum. Postnotum brown, no scales, a group of yellow hairs posteriorly. Abdomen with the colors separated in a straight line, venter with yellowish white, somewhat raised scales. Outstanding wing-scales broadly elliptical, rounded at tip, many of them obliquely truncate. Legs with pale brassy luster on upper side of mid tarsi. Claw formula: 0.0-0.0-0.0. Length: Body, 3 mm.; wing, 2.5 mm.

Male. Proboscis with whitish scales on under side on apical

fourth, the basal fourth white scaled all round. Palpi short, white scaled.

Genitalia. Side pieces twice as long as wide, a slight lobe present covered with minute hairs and small setæ. Clasp filament with three lobes arising from a very short stem, the mid lobe somewhat larger than the lateral ones; mid lobe expanded subapically, strongly tapered toward apex, tip slender, an incision going down for one-third of the length of the lobe; one margin with a row of setæ; below expanded portion there are two appendages, one small slender straight, the other one with short slender stem and much expanded apical part; one lateral lobe agrees in shape with the mid lobe, but is not so sharply pointed and is without appendages; the other lateral lobe is more quadrately elongate, one tip of outer margin broadly expanded, with a few short spines, other tip thumb-shaped, with a sharp spine, a few more spines present on margins. Harpes broad, with curved toothed tip. One uncal plate small slender, one plate slender long, serrate on one margin, one plate long curved at tip. Each basal appendage with two rather short spines at tip.

Larva. Head-hairs in twos, ante-antennal hairs multiple. Comb of eighth segment of 18 spines in a single row, air-tube five times as long as wide, false pecten all over the tube except at base. Many small two- and three-haired tufts on the tube.

Larvæ found in Bromeliaceæ, Lawa River, March, 1917.

Cotype, No. 22700, U. S. National Museum.

Hystatomyia lamellata, new species.

Male. Proboscis moderate, swollen apically. Palpi short. Clypeus nude. Occiput clothed with flat, dark scales, a margin of white scales around the eyes and a few milky white ones near the median line. Prothoracic lobes dark, the tips coppery-white. Mesonotum dark brown, with bronzy and blue reflection. Scutellum trilobate with vestiture similar to mesonotum. Postnotum without scales, with a group of hairs. Abdomen compressed, the colors separated in a straight line. Wings hyaline, scales of veins narrowly ovate. Legs black,

with bronzy and blue reflection, mid tarsi with brassy luster above, white beneath on four last joints. Fore and hind tarsi without white. Claw formula: 0.0-0.0-0.0. Length: Body, 2.5 mm.; wing, 2.5 mm.

Genitalia: Side-pieces over twice as long as wide; outer angle uniformly produced, leaving the clasp-filament as a small club-shaped appendage arising well beyond middle of side-pieces; a ridge of broad setæ extends beyond and below the middle of the side-piece. Four ligulate appendages and a leaf with broad base and pointed tip on side-piece near apex. A small lobe medianly and basally. Harpes weak with rounded tip, a slight tooth laterally at apex. Each basal appendage with five stout setæ.

We have two males, bred from Bromeliaceæ. Cie des mines d'or, Lawa River. They come very near *Wyeomyia autocratica* D. & K. of the monograph of mosquitoes of North and Central America and the West Indies. These two males come without any doubt in the new genus *Hystatomyia*, to which *autocratica* should also be referred.

Cotype, No. 22701, U. S. National Museum.

Prosopolepis flui, new species.

Female. Proboscis short, swollen at tip, black. Palpi short, one-fifth of proboscis, black. Antennæ slender. Clypeus with small elliptical, somewhat outstanding white scales on margin. Occiput with brown, flat scales, whitish at sides, a few black erect scales near the neck. Prothoracic lobes well separated with flat, brown scales. Mesonotum with small brown appressed scales. Scutellum with small flat, dark scales with whitish luster. Postnotum with a group of setæ posteriorly and a patch of dull, white scales in front. Abdomen sub-cylindrical, dorsally black, ventrally yellowish white, colors separated in a straight line. Wings very slightly smoky, scales of veins elliptical. Legs brownish-black, with slight metallic reflection, vestiture not roughened, pale beneath; three last hind tarsal joints white nearly all round, the apices of third and fourth joint with a black ring; mid legs with the base of

the tibiæ whitish on one side, the last four tarsal segments silvery white on one side, the white on second segment very narrow, on the last segment more yellowish and darker. Front legs with a faint coppery shine on three last segments. Claw formula: 0.0-0.0-0.0. Length: Body, 4.5 mm.; wing, 4 mm.

Albina, April, 1917; Dam, January, 1919. We captured adults in the woods at these two places in daytime.

This species differs from the other species of *Prosopolepis* by having scales on the postnotum.

Cotype, No. 22702, U. S. National Museum.

Culex (Carrollia) iridescens Lutz.

Culex (Carrollia) secunda, new species.

We have a number of males and females, which we cannot separate on colorational characters from *Culex (Carrollia) iridescens* Lutz from the Canal Zone. The larvæ and the male genitalia differ, however. The species was originally described from Brazil, to which our region is nearer than the Canal Zone. We presume our species to be the same as Lutz's species and we propose a new name, *Culex (Carrollia) secunda*, for the species from Panama.

The larval differences are as follows:

Air-tube with eleven hair-tufts, pecten with eleven teeth,

iridescens Lutz

Air-tube with six to eight hair-tufts, pecten with three to six teeth,

secunda, n. sp.

The differences in the genitalia are:

Outer arm of side-piece a rod with four flattened, apical spines,

iridescens Lutz

This arm reduced to a spine.....*secunda*, n. sp.

Culex (Carrollia) infoliata, new species.

The coloration of this new species is similar to that of the two species just mentioned, but differs in details. The genitalia have the tip of the clasp-filament subspherical as in *Culex (Carrollia) urichii* Coq. The larvæ are different from any other *Carrollia* larva known at present, by having the comb of the eighth segment in a triangular patch.

Cotype, No. 22703, U. S. National Museum.

Coloration

General coloration gray, abdomen subcylindrical, very little compressed, wing-scales linear to narrowly ligulate....*infoliata*, n. sp.

General coloration black, abdomen strongly compressed, wing-scales ligulate to elliptical with a few linear scales intermixed.....*iridescens* Lutz, *secunda*, n. sp.

Male genitalia

Arm of side-piece preceded by a patch of setæ.....*infoliata*, n. sp.

Without this structure.....*urichii* Coquillett

The larvæ live in tree-holes, like the other *Carrollia* species. We have them from the interior, Dam, January, 1919.

Culex (Culex) brevispinosus, new species.

A typical *Culex* in general appearance, extremely similar to *Culex (Culex) coronator* D. & K. and *Culex (Culex) surinamensis* Dyar. There are small triangular spines present on the air-tube of the larva, placed near the tip as in *coronator*. They are very much smaller, however, than in *coronator* and the air-tube is much longer and narrower, and there is no chance to confuse the two larvæ. The male genitalia come also very near to those of *coronator*, but the upper arm of the second plate is capitate instead of bearing a long slender sharply angled tooth as in *coronator* or a short thumb-shaped tooth as in *surinamensis*. The adults do not have the faint pale rings on the tarsi present in *coronator* and still more distinct in *surinamensis*.

Cotype, No. 22704, U. S. National Museum.

Culex (Choeroporpa) alcocci, new species.

Proboscis very long, black. Palpi short in the female, long in the male. Occiput densely clothed with yellowish brown upright forked and narrow curved scales medianly, with flat gray scales on the sides. Mesonotum shining yellowish-gray, clothed with very long, narrow curved black scales with strong golden-yellowish luster. Abdomen depressed, black above, pale below, a few dull white scales on the sides of the segments basally. Wings with elliptical scales. Legs bronzy brown, femora pale beneath. Length: Body, 3 mm.; wing, 2.5 mm.

Larva: Both pairs of head hairs multiple, short. Antennæ very stout, dark, spicular, a large tuft from a notch at outer third. Abdomen glabrous. Air-tube long, six times as long as wide, tapering on basal half, pecten of about seventeen teeth on basal two-fifths, five pairs of moderately long ventral hair-tufts. Lateral comb of eighth segment in a triangular patch. The thorax of the larva is white or azure blue, contrasting strongly with the black of the large head. They live in temporary pools in the woods.

Male genitalia: They show the typical clasp-filament of a *Choeroporpa* without a horn-like tuft. The outer division of the lobe of the side-piece bears a large leaf. The second plates of the unci are bifid. The genitalia come nearest to *Culex mutator* D. & K., but the second uncal plates have no sub-basal hook.

Zanderij, March 1, 1918.

Cotype, No. 22705, U. S. National Museum.

***Culex (Choeroporpa) saramaccensis*, new species.**

Proboscis rather long. Palpi short in the female, long in the male. Antennæ moderate. Occiput clothed with brown, flat scales, with a dull grayish luster and many upright forked scales on the nape. Mesonotum dark brown, with long narrow-curved bronzy brown scales. Scutellum with similar vestiture. Abdomen with black scales dorsally, dark scaled ventrally, a few dull white scales at the sides of the segments. Wings hyaline, with broadly linear to narrowly elliptical scales. Legs brownish, paler on under side.

Genitalia: Clasp-filament without horn-like tuft, side-piece without a leaf, second uncal plate without subbasal hooks, bifid, outer division of lobe of side-piece with single terminal filament free from the others.

Larva: Head-hairs in twos or single. Antennæ large, spicular, a tuft at outer third. Body hairy. Air-tube moderate, six times as long as wide, tapering on basal half, slightly curved, with five pairs of long ventral tufts. Pecten on basal two-fifths, reaching beyond the first ventral tuft. Comb of the eighth segment of very large spines in three rows.

The genitalia come nearest to *Culex chrysonotum* D. & K., but differ in the arrangement of the filaments on the lobe of the side-piece.

We found the larvæ in rock-pools in the Surinam River, Kabelstation, December, 1918.

Cotype, No. 22706, U. S. National Museum.

Culex (Choeroporpa) albinensis, new species.

Proboscis rather long. Palpi short in the female, long in the male. Antennæ moderate. Occiput clothed with flat grayish scales and many erect forked scales; a few narrow curved scales between the eyes. Mesonotum dark brown with bronzy brown narrow curved scales. Scutellum with similar vestiture. Abdomen black-scaled dorsally, dark-scaled ventrally, laterally with basal, segmental silvery-white patches. Wings hyaline, with broadly linear to narrowly elliptical scales. Legs moderate, brown; tarsi with brassy luster. Length: Body, 2.5 mm.; wing, 2.5 mm.

Genitalia: Clasp-filament without horn-like tuft, side-piece without a leaf, second uncal plate with a subbasal hook on inner margin, the fork denticulate centrally with horn-like limbs.

Larva: Antennæ large, spiculate, a tuft at outer third. Body spicular. Air-tube six times as long as wide, tapering on basal half, with a dark band at the middle. Pecten on basal third, about sixteen teeth. Five pairs of ventral tufts. Comb of the eighth segment several large spines in a patch.

The genitalia come close to *Culex educator* D. & K. but differ in the second uncal plate.

We found the larvæ in ground pools near Paramaribo.

Cotype, No 22707, U. S. National Museum.

Culex (Choeroporpa) coppenamensis, new species.

Male. Proboscis moderate, swollen at tip. Palpi long. Occiput clothed with broad, flat scales all over, many black erect scales posteriorly and a group of white semi-erect scales medianly and posteriorly. Mesonotum black, with bronzy brown, narrow curved scales. Scutellum with similar vesti-

ture. Abdomen blackish above, distinct dorsal, segmental, basal, white bands except on first two segments, continuing as lateral patches. Venter dark. Wings hyaline, scales broadly elliptical, narrower near base of the wings. Legs bronzy brown. Claw-formula: 1.1-1.1-0.0. Length: Body, 3 mm.; wing, 2.5 mm.

Genitalia: Clasp-filament without horn-like tuft, second uncal plate with the apex with three points, one of them more strongly chitinized than the others and hook-like. Harpes with comb-shaped tip. Outer division of lobe of side-piece branched, one long branch with a short expanded leaf, one short one with a long terminal filament and three hair-like appendages; inner division divided, each part with a long filament with bent tip.

Larva: Head-hairs all single. Antennæ spicular, a large tuft at outer third. Body slightly spicular. Air-tube stout, slightly tapering, six times as long as wide; pecten on basal two-fifths of about sixteen teeth; five pairs of hair-tufts beyond the pecten. Comb of eighth segment a triangular patch.

We found the larvæ in a ground-pool at Kabelstation in the interior, May, 1919.

Cotype, No. 22708, U. S. National Museum.

Culex (Choeroporpa) nicceriensis, new species.

Proboscis moderate, swollen at tip. Palpi long in the male, short in the female. Occiput clothed with coppery brown narrow curved scales, black upright forked scales and flat white scales at the sides. Mesonotum black, with coppery brown narrow curved scales. Scutellum with similar vestiture. Abdomen blackish above, distinct dorsal, basal, segmental, white bands, except on first two segments, continuing as lateral patches. A patch of dull flat golden scales on the middle of the first segment dorsally. Venter black. Wings hyaline, scales broadly elliptical, narrower near base of the wings. Legs bronzy brown. Length: Body, 2 mm.; wing, 2 mm.

Genitalia: Side-piece twice as long as wide; a divided lobe on outer third, outer division with a terminal filament with

bent tip, a large leaf longer even than the filament, with a few shorter, flattened, hair-like appendages subapically, inner division with a filament on a stout pedicle and another filament from the base of this pedicle. Harpes slender, the tip comb-shaped. Clasp-filament broadened at apex, roughened outwardly, with snout-like termination. Second uncal plate with a concave tip, one point sharp, the other point rounded and not denticulate.

Larva: Antennæ large, spicular, a tuft at outer third. Upper head-hairs in threes. Body very slightly spicular. Air-tube ten times as long as wide, pecten on basal two-sevenths of about sixteen teeth, only six ventral tufts left in our single mount, suggesting the presence of five pairs. Comb of eighth segment a large triangular patch.

We have a male and a female bred from larvæ in ground-pools at Kabelstation, December, 1918, and May, 1919.

The genitalia come near to those of *Culex invocator* Pazos from Cuba, but differ in details of the structure of the outer division of the lobe.

Culex (Choeroporpa) maroniensis, new species.

Male. Proboscis expanded apically. Palpi long. Occiput covered with flat whitish scales and black upright forked scales and a few narrow curved scales. Mesonotum with bronzy brown scales. Abdomen black above, a row of indistinct small, white, segmental, lateral, basal spots. Venter dark with pale basal bands. Wings hyaline, scales ligulate to elliptical. Legs bronzy brown. Claw formula: 1.1-1.1-0.0. Length: Body, 2.5 mm.; wing, 2 mm.

Genitalia: Side-piece with a divided lobe on outer third; outer division with a number of filaments and setæ, inner division with a terminal rod and another one with hooked tip at its base. Harpes slender, with comb-shaped tip, with large number of teeth. Second uncal plate with a basal hook, apex with rounded inner corner and a strongly chitinized outer point; the margin between denticulate and forming another chitinized point in the center.

The genitalia come near to those of *albinensis*, but they have an extra chitinous point at the apex of the second uncal plate.

We have only one male, found in Surinam, but we lost the note of the exact locality.

Culex (Melanoconion) ensiformis, new species.

Proboscis slender. Palpi short in the female, long in the male. Occiput brown, with creamy white curved scales in the middle, grayish flat scales at the sides and with numerous black erect scales. Mesonotum with creamy golden, narrow curved scales, but a broad median and two lateral stripes of brown narrow curved scales. Scutellum brown with some creamy golden scales. Abdomen black above with basal segmental lateral white patches; center black, with narrow pale basal bands. Wings hyaline with ovate scales near the tip. Legs black, tips of femora, tibiae and bases of first tarsal joints paler. Length: Body, 3 mm.; wing, 2.5 mm.

Genitalia: Side-piece with a lobe at outer third and simple clasp-filament. Outer division of the lobe small with a ribbed leaf and a seta, inner division with a rod and a seta. Harpes with comb-shaped tip. Plate at the base of the side-piece narrow, blade-like.

Larva: Antennae large, a tuft beyond the middle, spinulate. Upper head-hairs multiple, lower single. Body pilose. Lateral comb of the eighth segment of many small spines and one row of very long spines in a patch. Air-tube long and slender with five pairs of tufts and a pecten of about eleven spines on basal third.

We found the larvæ in grassy pools, Kabelstation, December, 1918; Dam, January, 1919.

This species is very characteristic in the larva, because of the long air-tube and the large spines in the comb of the eighth segment.

Cotype. No. 22709, U. S. National Museum.

Culex (Melanoconion) commevynensis, new species.

Male. Proboscis moderate, expanded apically. Palpi long. Occiput with pale golden, narrow curved scales, yellowish and

black upright forked scales and flat white scales at the sides. Mesonotum with pale golden brown, narrow curved scales on anterior half of mesonotum, brown on posterior half. Abdomen black above, with narrow white basal bands except on the two first segments. Lateral basal, segmental spots. Venter dark with pale basal bands. Wings hyaline with broadly elliptical scales. Legs bronzy brown. Claw formula: 1.1-1.1-0.0.

Genitalia: Side-pieces with a simple clasp-filament; a divided lobe on outer third; outer division with a large leaf and a seta, inner division with a heavy stout spine and a seta at its base. Between the lobe and the apex of the side-piece a large scale-like structure. Unci with several plates, one blade-like at the base of the side-piece. Harpes slender, with comb-shaped tip with seven broad teeth.

Only one male, bred from a ditch, Alkmaar, March, 1919; near *Culex ensiformis*.

***Culex (Mochlostyrax) curopinensis*, new species.**

The adults show no tangible differences from *Culex (Mochlostyrax) alogistus* Dyar. The larvæ also look very similar, but the genitalia are distinct.

Side-pieces with a lobe, extending from the middle to near the tip; divided into three portions, outer bearing three rods, a small leaf-like appendage and a seta, others bearing each a long filament with tapered recurved tip. Clasp-filament stout, with foot-shaped tip. Harpes with comb-shaped tip. Second uncal plate ending in three points, middle one with distinct radial pecten. Two appendages at the base of the genitalic structures, partly chitinized and finger-shaped, this chitinized part bearing at least one long seta.

The basal lobes of *alogistus* are much larger.

Culex curopinensis is common all over the colony throughout the year.

Cotype, No. 22710, U. S. National Museum.

***Culex (Mochlostyrax) multispinosus*, new species.**

We do not see differences in the adults from *Culex (Moch-*

lostyrax) *alogistus*, except that perhaps the scales on the head show less white and are of a darker color. The larvæ and male genitalia differ, however.

Genitalia: These differ from *alogistus* in having two lateral lobes at the base bearing long wavy hairs, reaching the tip of the side-piece. Besides small normal basal lobes are present.

Larva: Antennæ prominent, a tuft beyond the middle, spinulate. Lateral comb of the eighth segment of about fourteen spines in a regular nearly straight row. Air-tube about three times as long as wide, slightly curved, eight pairs of very long hair-tufts along posterior margin, the length of the tube. Pecten of about nine teeth, placed on basal two-fifths of the tube.

Larvæ in permanent pools, Kabelstation, May, 1919.

Cotype, No. 22711, U. S. National Museum.

***Aëdes arborealis*, new species.**

Proboscis uniform. Palpi short in the female, long in the male. Occiput with golden narrow curved scales on a wide median zone and along the eye-margins, a patch of flat white scales on the cheeks becoming more yellowish medianly. Mesonotum clothed with golden brown scales. Three broad lines, one median and two subdorsal, of golden yellow scales run from the anterior margin to the ante-scutellar area. More laterally a golden yellow line starting at the front margin reaches the scutellum. More laterally still is a patch of golden scales near the root of the wing, and a few diffuse patches in front of this. A few golden scales mixed with the brown ones around the ante-scutellar area. Abdomen and legs much like those of *Aëdes fulvithorax* Lutz. Wings with the outstanding scales lanceolate, rounded. Claw formula: Female, 0.0-0.0-0.0; male, 1.1-1.1-0.0. Length: Body, 4 mm.; wing, 3 mm.

Genitalia: They place the species in the *Howardina* group, where it comes near to *fulvithorax* Lutz, but the seta adjacent to the terminal seta on the harpago is nearly as long as it, whereas it is much shorter in *fulvithorax*.

Larva: Antennæ slender, uniform, smooth, a single hair beyond the middle. Head-hairs double. Skin smooth. Lateral comb of eighth segment a triangular patch. Air-tube stout, twice as long as wide, pecten of eleven teeth not reaching the middle of the tube, and followed by a two-haired tuft.

This species was bred by us from a tree-hole, Dam, January, 1919, in the interior. The coloration of the adult is something between that of *Aedes fulvithorax* Lutz and *Aedes septemstriatus* D. & K.

Cotype, No. 22712, U. S. National Museum.

***Aedes argyrothorax*, new species.**

Male. Proboscis uniform. Palpi two-thirds as long as proboscis. Occiput with silvery-white flat scales, a black patch on the cheeks, a few upright forked scales behind. Mesonotum with the front half with silvery white scales, the hind margin slightly V-shaped, the point directed forward. Abdomen black above, with silvery, segmental basal, lateral spots. Wings with the scales ligulate. Legs with the femora black and white, tibiae black, tarsi black, but base and tip of first joint and base of second joint white on mid and hind legs. Claw formula: 2.1-2.1-0.0. Length: Body, 3.5 mm.; wing, 2.5 mm.

Genitalia: They place the species in the *Gualteria* group near *Aedes oswaldi* Lutz, *thorntoni* D. & K., and *podographicus* D. & K. Side-pieces without lobes. Clasp-filament uniform. Harpes narrow. Harpagones moderately long, pilose, with a pilose basal quadrangular arm; filament about as long as stem, broadened beyond the base, gradually narrowing and curved toward tip. Unci moderate.

We have two males, one of which was captured near a tree-hole on an estate near Paramaribo.

Cotype, No. 22713, U. S. National Museum.

***Megarhinus aldrichanus*, new species.**

Female. Proboscis curved, palpi two-thirds of its length, terminal joint minute, blunt. Occiput with flat bright, bluish-green scales, whitish at sides. Mesonotum with dark bronzy brown scales, more greenish blue in front and at the sides; no

stripes. Abdomen black above with green and violet reflection; venter golden scaled with dark median line, last two segments nearly completely dark beneath. Legs without white.

This species differs from any other *Megarhinus* by the absence of abdominal tufts and of white on the legs in the female. We saw our specimens emerge from the pupæ and the tufts were not left in the pupal skins.

We have two females, bred from ground Bromeliaceæ, Dam, January, 1919.

Megarhinus guadeloupensis guianensis, new subspecies.

We have one female and one male from different localities which we are not sure belong to the same species. Both, however, come near to *Megarhinus guadeloupensis*. The female differs by the coloration of the palpi which is substantially silvery blue. The hind legs have white on the fifth tarsal joint also. The male differs in the antennæ which are more plumose and bear blue scales on the second joint.

We hope to give complete descriptions of these species in the near future in a publication on the mosquito fauna of Surinam. Our material will be placed in the collection of the Colonial Institute, Amsterdam, Holland. Cotypes, except of uniques, are also in the collection of the U. S. National Museum, Washington, D. C., and we have added the type numbers of the specimens so deposited.

We are much indebted to Doctor Dyar of Washington for his assistance in studying our material, especially our mounts of the male genitalia.

NEW SPECIES OF ELASMUS FROM AUSTRALIA

(Hymenoptera, Elasmidæ)

By A. A. GIRAULT

***Elasmus pavo*, new species.**

Like *flavipostscutellum*, but postscutellum black at base, abdomen orange but margined down sides for a bit over proximal half except for a space at proximal one-eighth; also distal fourth above metallic save (sometimes) for a very narrow orange stripe near tip. Mandibles 6-dentate. Scape pale. Head punctures rather sparse. Pedicel rather long, equal to funicle 3, funicle 1 twice longer than wide.

Gordonvale, Queensland, forest, July 9, 1918. Also Aloomba, July 10. Also Brisbane, November, 1916 (H. Hacker).

***Elasmus kulabaga*, new species.**

Like *divinus*, but abdomen wholly metallic, the distinct infuscation of the fore wing is uniform and over distal fourth. Mandibles 7-dentate. Head punctures tolerably dense. Scape pale. Funicle 1 twice longer than wide. Also first leg pale save femur above, coxa at base; 2 and 3 green save apex of coxæ, base of femora and the tibiæ. Postscutellum all yellow.

From canes, Nelson, October, 1915 (A. P. Dodd).

***Elasmus nakomara*, new species.**

Like *formosus*, but propodeum all metallic, upper edge hind coxæ so, the mandibles only 5-dentate. Funicle 1 thrice longer than wide.

Brisbane, June (H. Hacker).

***Elasmus arumburinga*, new species.**

Like *formosus*, but pronotum widely black to scutum's middle, then rest of scutum metallic and distal two-thirds parapsides, this metallic acute on its cephalic end, a dot under tegula, all of propodeum save latero-caudal margin. Mandibles 6-dentate. Cephalic margin scutellum narrowly metallic. Head densely punctate, also upper edge hind coxa.

Samford, near Brisbane, May, 1916 (H. Hacker). From *Leptospermum*.

Elasmus ero, new species.

Like *shellyi* but scape concolorous, the distal metallic of abdomen is divided by a narrow orange cross-stripe very near its proximal ends. Femora white at apex.

Brisbane, October (H. Hacker).

Elasmus inkaka, new species.

Like *flavipostscutellum* but orange part of abdomen with three narrow cross-stripes, funicle 1 cup-shaped, shorter than pedicel, 2 twice wider than long, hind coxa with only dorsal sixth metallic. Orange of abdomen longer than distal metallic.

Two females, Gordonvale, forest, July.

Elasmus centaurus, new species.

Orange, the head green save triangularly from mouth up to antennæ (including lower edge of cheek), densely punctate. Green: Pronotum (nearly to hind margin at meson but the hind margin of green convex, thus recedes behind further and further, leaving wider yellow), axillæ, tegulæ save base at apex, scutellum, scutum behind in the form of a blunt cone one-third way up meson, mesopleurum (save prepectus), pedicel, funicle and club, postscutellum conically toward middle and extreme apex, propodeum, metapleurum, upper sixth hind coxa widely centrally, proximal fourth, distal third of abdomen above, the intermediate orange nearly equal the distal metallic. Distad, upper edge of hind femur metallic. Wings subhyaline, setæ of hind tibiæ in sagittate areas. Funicles much longer than wide. Mandibles 5-dentate.

Jungle, Mount Sophia, June. Also at Gordonvale, jungle, in late August.

Elasmus burnsi, new species.

Robust. Runs to *lividus* but scape dusky save two-thirds beneath toward base, first legs save coxa at extreme base, knees, base hind femur, all tibiæ and tarsi pale. Abdomen red

at basal third beneath, postscutellum lemon at distal half. Mandibles 6-dentate. Head densely punctate. Funicles equal, longer than wide. First femur black above at basal two-thirds. An elongate species. Hind coxa all black.

Sydney, New South Wales, forest, October, 1917. Also at Gordonvale, bed of Mulgrave River, August, 1918.

Elasmus voltairei, new species.

Runs to *australiensis* but mandibles 6-7 dentate, coxa 2 green at basal half, all of coxa 3 so, while femur 3 has a broken, rather wide green stripe obliquely cross a bit distad of middle, this stripe broken or interrupted at its middle; basal half of abdomen beneath red. Head densely punctate. Scape dark along dorsal edge. Base of tegulæ lemon, also a cuneate spot between it and axilla. Postscutellum lemon save at base.

Sydney, forest, October, 1917.

Elasmus dumasi, new species.

Like *flavipostscutellum* but above nearly distal two-thirds (distal half below) of abdomen black, the orange part only half this or less and twice the basal green. Also the tegulæ are yellow.

Gordonvale, forest, March.

Elasmus shellyi, new species.

Like male *cyaneicoca* but scape pale, orange of abdomen exceeds by a third the distal metallic (distal third), four times the basal (basal eighth); fore femur black along dorsal edge. Mandibles 6-dentate.

Cairns, forest, July 5, 1918.

Elasmus silvensis, new species.

Like *kurandaensis* but cephalic half scutum metallic save extreme cephalo-lateral corner, cephalic half parapside metallic, dot on meson of scutum, hind margin; scutellum margined all around with yellow, the distal stripe of abdomen is not as long as the distal green, there is a still narrower cross-stripe at over proximal third and across middle four dots,

two on each side meson. Mandibles 6-dentate. Also the mesopleural area is narrowly separated from most of the metallic metapleura hence does not go to hind coxa.

Gordonvale, July 8, 1918, forest.

***Elasmus maculatipennis rex*, new variety.**

Like the typical form but four marginal dots on abdomen, the first round and smallest, the others transverse but not joined (8 in all).

Nelson, forest, August.

***Elasmus regina*, new species.**

Like *burnsi* but segments 2-4 of abdomen red at ventro-lateral halves (or more as regards 2) and 2 red cross apex above. Scape pale. Postscutellum all lemon, wings hyaline. Femur 2 and 3 not pale at apex and abdomen is narrower. The body is less robust, the hind wings distinctly narrower and less knife-shaped.

Two females, jungle, Aloomba; August, Mulgrave River.

***Elasmus shellyi geminus*, new variety.**

Like *shellyi* but abdomen above with 7-8 green, and base of 6, besides the base of 2, so there is a cross-stripe before the distal green. Also leg 1 all pale. Head densely punctate. Mandibles 5-dentate.

One female, Gordonvale, forest, August.

***Elasmus joulei*, new species.**

Like *aquila* but femora less widely pale at base, coxa 3 less so at apex, scape pale, abdomen green equals 5-8 above, basal half of 2, a narrow cross-stripe following this but not reaching lateral margin, apex of 2 and 3 save at lateral margin. Mandible 6-dentate.

One female, Pt. Douglas, grass on salt pan, September.

***Elasmus pretiosus*, new species.**

Like *fasciatus* but cross-stripe on femur 2 distinctly broken between middle and hind margin, half smaller is the body and abdomen green is basal third of 2, 4-8 and a mark cross middle of 3. Coxa 1 pale save at base.

Babinda, September, jungle.

Elasmus unfasciiventris, new species.

Like *taurus* but abdomen green: basal third of 2, 6-8 and a very distinct narrow stripe across base of 5. Mandibles 5-dentate. Head densely punctate.

Babinda, September, jungle.

Elasmus nympha, new species.

Like *fasciipes* but femur 2 aeneous save at each end, first legs pale, abdomen green basal half of 2, transverse marginal spot base and apex of 3, cross-stripes cross base of 5 and 6, all 7-8. A streak of yellow runs along femur 2 near caudal margin, dividing the green. A lemon spot between tegula and axilla. Scutellum with a lemon stripe cross it very near base. Tegulae lemon.

Jungle, Mulgrave River, November.

Elasmus apus, new species.

Head green save occiput and face up to eyes or nearly (as to face). Tegulae, axillae and space between, meson of propodeum, a dot off middle scutellum on dorsal thorax, middle of dorsal margin of coxa 3 more or less, flagellum, 8 of abdomen and basal two-third 7, black. Mandibles 6-dentate.

Forest, Nelson, April.

Elasmus picturatus mus, new variety.

Like type but a dot at margin of abdomen, apex segments 3 and 4 and a spot at dorsal meson of 8, centrally.

Forest, Gordonvale, August, blady grass, 2 females.

Elasmus perdubius, new species.

Like *pulexoides* but stripes on abdomen closer together and differently disposed and there is a transverse marginal spot at apex of 2; the stripes are: Apex 3, distal half of 4, distal two-thirds 5 and all of 6 save extreme base; 7 and 8 are green. Stripe 1 is farther from the basal green than in the named species. Hind coxae and femora pale at apex and base respectively.

Gordonvale, blady grass, August 15, 1918 (Mandibles not seen).

Elasmus helena, new species.

Like *lyra* but much smaller and basal half abdomen 2 green, pronotum less green, propodeum all green.

Jungle, Babinda, September.

Elasmus ignorabilis bellus, new variety.

Like typical form but wing with a distinct, long oblique stripe from stigmal vein as in *divinus*, the apex of abdomen 6 above is narrowly orange, while black along the middle of side of abdomen 5 connects the black apex of 5 with the black upper sides of 3 and 4. Scape dusky at apex. Postscutellum entirely lemon. Tegulæ metallic.

Jungle along Mulgrave River, Gordonvale, December.

Elasmus nanja, new species.

Like *pallidicornis* but flagellum dark, funicles half longer than wide, exceeding pedicel, mandibles 7-dentate, abdomen red at base beneath, postscutellum yellow at tip, distal third femur 1, tibiæ 1 and 3 pale. Scape concolorous.

Brisbane, herbage, June, 1913 (H. Hacker).

Elasmus grimmi, new species.

Like *trifasciiventris* but abdomen orange save somewhat over distal third and narrowly at base above and margins at base. Coxa 1 nearly all pale. Head punctate. Orange of abdomen subequal to distal metallic.

From cane, April, September, 1915 (A. P. Dodd).

Elasmus cygnus, new species.

Like *stellatus* but upper half occiput black except dorso-laterad, the black joined to the ocellar spot; about half pronotum metallic, the area on mesopleurum is quadrate, still isolated, the mesopleurum is metallic, no dot on parapside nor spot on distal abdomen, entire propodeum metallic. Mandibles 6-dentate.

Gordonvale, July 29, blady grass.

Elasmus io, new species.

Like *flavinotus* but mandibles 7-dentate, basal half hind femur pale, abdomen above metallic, save distal margins segments 2-5, with *cygnus*.

Elasmus virgo, new species.

Like *margiscutellum* but scape, legs pale, a minute yellow dot between yellow tegula and the axilla, mandibles 6-dentate, club with a distinct spicule, abdomen with basal seventh, distal third save narrow cross stripe near tip and three incomplete cross-stripes between, 1 at apex of segment 2, others at same of 3 and 4.

Forest, Gordonvale, August 9, 1918.

A NEW SPECIES OF LEPIDIOTA FROM NORTHERN QUEENSLAND

(*Coleoptera, Scarabaeidae*)

By A. A. GIRAULT

Lepidiota consobrina, new species.

Female: Like *frenchi* with which compared but somewhat larger; dorsal prothorax and base of elytron very dark brown, these shading into reddish, thus not uniform; joints 6-7 of male antenna shorter than same in female, also club larger in proportion; teeth on outer edge of front tibia obtuse and not equidistant; scaliness on venter of abdomen 2-5 much narrower widely across meson, in the middle segments not nearly covering the segment.

In the larva, the path or naked area on the distal venter is not ovate and closed but flask-shaped and open cephalad; also the head is wider. The elytral scales of the two species differ in shape.

Messrs. Edmund Jarvis and A. P. Dodd first pointed out the above characteristics of this species (see Bureau Sugar Experiment Stations of Queensland, Bulletins Nos. 5 and 6, their No. 683). Type in Queensland Museum.

A NEW NOCTUID FROM ARIZONA

(Lepidoptera, Noctuidæ, Acronyctinæ)

By HARRISON G. DYAR

Thurberiphaga catalina, new genus and species.

Fore wing with an areole; fore tibiæ and tarsi without special armature; frons with a truncate conical prominence with raised edges, large, without central prominence, but a slight scar that in some specimens resembles the remains of a vertical ridge; abdomen with a low decumbent crest on basal segment only; prothorax without crest, proboscis well-developed; palpi porrect, rather short; eyes large and round; thorax clothed with hair and scales mixed, patagia normal.

Thorax pale yellow, head and front of tegulæ pink. Fore wing pale yellow, a pink band beyond middle, shaded within, limited without, curving sharply over cell; fringe pink from apex to below vein 2, a dark pink line from apex to vein 6, below which there is a brownish shade to vein 2, diffused inward along the veins to the pink band. Hind wing brownish cream-color with a browner patch beyond cell to apex. Abdomen creamy brown, darker dorsally. Expanse, 25–33 mm.

Cotypes, three males, two females, No. 22727, U. S. Nat. Mus.; Sabino Canyon, Santa Catalina Mountains, Arizona, August 2, 1919, "Pink boll-worm of *Thurberia*" (J. D. Mitchell, Hunter No. 3869).

Three other specimens have been damaged by careless handling. Of these, two issued at Victoria, Texas, with the above (J. D. Mitchell), the third issued at Brownsville, Texas, August 6, 1919 (J. C. Barber).

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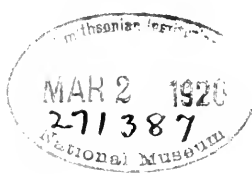
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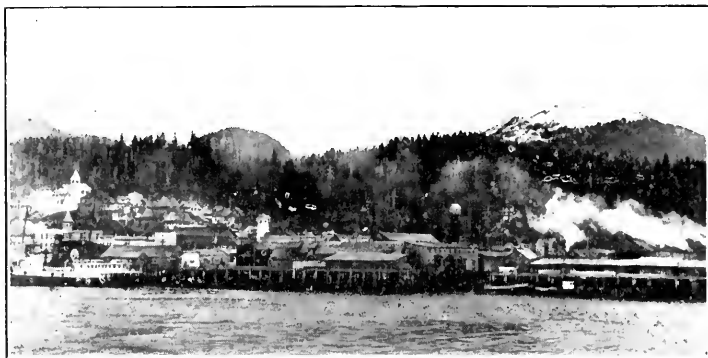


FIG. 1. KETCHIKAN, ALASKA, FROM TIDE WATER



FIG. 2. PRINCE RUPERT, BRITISH COLUMBIA, LOOKING DOWN FROM NEAR THE TOP OF THE RESERVOIR HILL

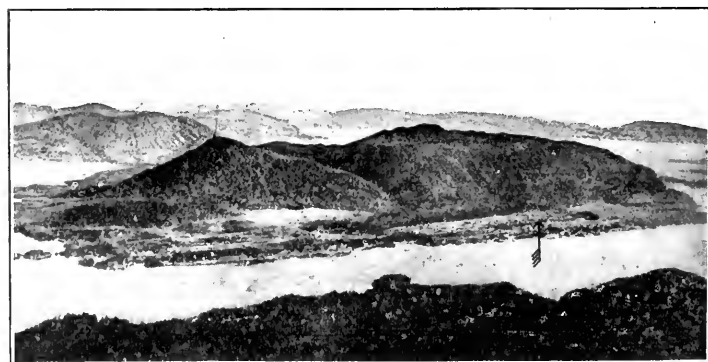


FIG. 3. KAIEN ISLAND, SEEN FROM TOP OF HILL ACROSS THE WATER. PRINCE RUPERT IS INDICATED BY AN ARROW

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THE MOSQUITOES OF BRITISH COLUMBIA AND YUKON TERRITORY, CANADA

(Diptera, Culicidæ)

BY HARRISON G. DYAR

During the summer of 1919 I continued the exploration of the Canadian mosquito fauna westward from the Continental Divide where I left it the previous season (Ins. Ins. Mens., vii, 11-39, 1919) to the Pacific Ocean, and northward down the Yukon Valley to near the Alaskan boundary. The streams emptying into the Arctic Ocean were not explored in either British Columbia or Yukon Territory, and some other omissions are noted below. The season resulted in 11,220 specimens, besides which I have 33 others, selected from the collection of Dr. C. Gordon Hewitt by his kind permission.

A somewhat complicated condition exists in the west, owing to the fact that two very distinct faunal regions are embraced within the limits of British Columbia, while the Canadian fauna proper divides up into several subregions in which peculiar combinations of species occur.

I. CANADIAN FAUNA

The Canadian fauna proper extends down the western slope of the Rocky Mountains and reaches tide water at certain points. It occupies all the mountains and smaller river valleys, but in the larger valleys is modified. The Kootenay-Columbia region was explored in 1903 and, though the results are unsatisfactory according to present standards, the region evidently belongs to the border zone of the Canadian fauna

as at Winnipeg or Ottawa, with the Rocky Mountain species added in the high elevations. The Nass, Stikine, Taku and Alsek valleys, flowing into the Pacific, have not been explored; but they are all smaller than the Skeena, and probably do not present different faunistic conditions.

Fraser Valley.—From the junction of the Fraser and Nechaco at Prince George, the Fraser Valley broadens out southward, producing a flood-plain, in which many pools are formed by seepage at the time of floods from the melting snows of the mountains. A special fauna has adapted itself to these conditions, although it is few in species. An economic problem has arisen in the lower valley, involving this fauna, which is being investigated by Mr. Eric Hearle under the direction of Dr. C. Gordon Hewitt. A report may be expected later from these gentlemen, so I will not deal with the fauna here.

Skeena Valley.—The lower Skeena River forms flood-pools in the same manner as the Fraser, but there is no broad flood-plain and the whole region is forested. In these pools five members of the Canadian fauna have established themselves in the following order of abundance: *lazarensis* F. & Y., *cinereus* Meig., *intrudens* Dyar, *diantaeus* H., D. & K., and *pionips* Dyar, all normally early spring forms. None of the river-pool species occur in these pools, nor any members of the *excrucians* group, nor any other members of the spring fauna such as *punctor*, *decticus* or *pullatus*, though these species occur in early snow pools in the same region. Neither do normally later-occurring species appear, such as *canadensis* and *vexans*. Exactly what conditions this peculiar selection of species in the Skeena flood-pools, I do not know. The common occurrence of *diantaeus* is the most interesting. I never met this species commonly before, nor have I positive records west of White River, Ontario. Early snow-pools also occur in the Skeena Valley and these give rise to the ordinary Canadian fauna, of which *punctor* is a very prominent if not dominant member.

Yukon Valley.—The river rises in a series of great lakes which lie to the eastward of the coastal barrier mountains. These great reservoirs prevent sudden floods and there is no flood-pool fauna. The country is forested with spruce and pine, though rather sparsely and openly. Semi-prairie conditions are produced, of which *prodotes* and *callithotrys*, a new form allied to *campestris* D. & K., take advantage, flying abundantly in the open. The latter species seems confined to the pine country, as I met with it only in the vicinity of White Horse, with what may have been a stray specimen at Skagway. All the other species of the Canadian fauna are represented except *intrudens* and *diantaeus*, and there is a form representing the eastern *stimulans* Walker in river pools, which I describe as new on account of certain small differences. The dominant species is *lazarensis*, frequenting the forest. The three Rocky Mountain species of *Culiseta* are common along the Yukon, and there is one rare *Anopheles*, but no *Culex*. The Yukon fauna crosses the White Pass and reaches tide water at Skagway, Alaska.

The swarming habits of the common males at White Horse were constant and interesting. The town is in the sandy level river-flat with a high bluff behind, formerly the river margin. On walking toward the bluff any still evening, males were encountered, first the *callithotrys* in the tops of the small pines; next *prodotes* over open spaces between pines and willows, then, on reaching the high spruce trees, *lazarensis*, high up opposite the ends of projecting branches, and lastly in openings between tall spruce, over willow bushes, *puncctor*, and an occasional *excrucians*, high up and flying wildly. At Dawson, *pullatus* appeared over willow bushes on the hillside any time after 4 p. m. that the sun went behind a cloud.

I note the following desiderata for the Canadian fauna: Larvæ of *callithotrys* Dyar; mating habits of *intrudens* Dyar.

Aëdes puncctor Kirby.

Culex puncctor Kirby, Richardson's Fauna Bor. Am., iv, 309, 1837.

Culex implacabilis Walker, List Dipt. Brit. Mus., i, 7, 1848.

Culex provocans Walker, List Dipt. Brit. Mus., i, 7, 1848.

Culex abserratus Felt & Young, Science, n. s., xx, 312, 1904.

Culicelsa auroides Felt, Bull. 79, N. Y. Sta. Mus., 448, 1905.

Aedes centrotus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 747, 1917.

Mr. F. W. Edwards, of the British Museum, after comparing Walker's types with Canadian specimens, remarks: "*C. implacabilis* Walk. is almost certainly the same as *A. punctor* as identified by you. *C. provocans* Walk. is quite unrecognizable, but *might* be *punctor*." I include the synonymy as indicated.

A. punctor extends throughout the Canadian region, reaching the Yukon Valley. It is, however, not the dominant species in the west, being replaced in that respect by *lazarensis*. In the Coastal Region it gives rise to derivative species, which are discussed under that heading.

The coloration possesses the usual variability. The mesonotum may be yellow or gray or wholly suffused with dark brown; the median band may be distinct or diffused and divided. The dark *abserratus* form is comparatively rare, and not usual as in the east. There is no difference in specimens taken in the Yukon watershed.

In the Skeena Valley the species breeds in the early snow-pools, but not in the late flood-pools. Adults flying in August there were very old and worn while *lazarensis*, *diantaeus* and others from the flood-pools were still fresh.

Total, 808 specimens: Edmonton, Alberta, May 4, 14, 1919; Prince George, British Columbia, May 12, 13, 14, 16, 17, 18, 20, 22, 24, 25, 26, 27, 1919; Hazelton, British Columbia, September 6, 1919; Terrace, British Columbia, August 12, 13, 14, 1919; Kwinitsa, British Columbia, May 22, 23, 24, 25, 28, 29, June 1, 2, 6, 7, 1919; Skagway, Alaska, June 26, 29, July 1, 31, 1919; Atlin, British Columbia, July 22, 23, 24, 1919; Carcross, Yukon Territory, July 21, 27, 1919; White Horse, Yukon Territory, June 26-30, July 1-5, 16, 17, 1919; Tahkeena River, Yukon Territory, July 19, 1919; Byer's Camp, Yukon Territory, July 6, 1919; Carmack's, Yukon Territory, July 14, 1919; Selkirk, Yukon Territory, July 13, 1919; Horse Falls, Yukon

Territory, July 13, 1919; Dawson, Yukon Territory, July 7-11, 1919.

***Aedes lazarensis* Felt & Young.**

Culex lazarensis Felt & Young, Science, n. s., xx, 312, 1904.

Culex borealis Ludlow, Can. Ent., xliii, 178, 1911.

Doctor Ludlow gives the indefinite locality "Alaska" for her species. Upon inquiring if she had more definite data, I was informed that the types came from Fort Egbert, Eagle, Alaska, which is in the Yukon Valley, about 100 miles below Dawson. Specimens which are evidently cotypes, although not so marked, from Eagle, Alaska, are in the collection, presented by Doctor Ludlow. They are large, stout specimens with almost normal *lazarensis* markings.

Males were repeatedly seen swarming at White Horse, after sunset, opposite projecting branches of large spruce trees, 10 to 20 feet from the ground.

This is the most abundant mosquito in the British Columbia mountains and also in the Yukon Valley. It is absent from the Fraser bottom lands, even as high up as Prince George, but occurs a few miles from that place in the valleys of tributary creeks. In the Skeena, it is dominant down to tide-water. There appear to be two emergences in this region, first the normal early one from snow-pools, and later in greater abundance from the flood-pools.

As occurring in the Skeena Valley, *lazarensis* is of normal coloration. The mesonotum is yellow, with two dorsal dark brown lines and short sublateral ones. Variation is not great. The form with brown suffusion on the disk of the mesonotum between the lines occurs rarely. Occasionally the lines are broadened, the two dorsal ones even fused, but this is exceptional. The ground color is always yellow, never gray. The most striking variation is the obsolescence of the lines, in which case the mesonotum is suffused with brown centrally. Specimens of this form, taken out of doors, were thought at first to be *intrudens* with the mesonotum marginally lightened; but I never found any of them in the house. Fortunately a male

of this form was bred and proved to be *lazarensis*. Last season I took this form to be a variation of *decticus*, but evidently wrongly. A considerable number of the specimens listed by me under *decticus* (Ins. Ins. Mens., vii, 18, 1919) will have to be removed.

In the Yukon watershed, including the lakes at its head and across the White Pass to the end of the Lynn Canal, *lazarensis* is also the dominant species; but it has taken on a wholly different aspect. The normal form occurs, but it is rare. Usually the mesonotum is light gray without trace of yellow or brown shading. The lines vary from narrow to broad, the broad form the commonest, sometimes completely confluent, leaving only a pair of star-like whitish specks, or even the mesonotum wholly blackish brown. The markings seem to have run wild, all sorts of freakish-looking variations occurring. As a whole a rather distinctly marked race is indicated, for which the name *borealis* Ludlow is available, although the type of *borealis* is an almost normally marked *lazarensis*.

Total, 3,612 specimens: (normal form) Prince George, British Columbia, May 9-20, 22, 25, 1919; Terrace, British Columbia, August 12, 13, 14, 1919; Salvus, British Columbia, May 27, 28, June 3-8, 13, 1919; Kwinitsa, British Columbia, May 24, 25, 1919; (*borealis* form) Skagway, Alaska, June 24, 25, 28, 29, July 28, 1919; Glacier, Alaska, June 26, 1919; Pitchfork Falls, Alaska, July 28, 1919; Atlin, British Columbia, July 22-25, 1919; Carcross, Yukon Territory, June 21, 26, 27, 1919; White Horse, Yukon Territory, June 26-29, July 1-5, 7, 8, 16-18, 1919; Tahkeena River, Yukon Territory, July 19, 1919; Hootalinqua, Yukon Territory, July 15, 1919; Half way to Big Salmon, July 15, 1919; Big Salmon, Yukon Territory, July 15, 1919; Byer's Camp, Yukon Territory, July 6, 1919; Tantalus Mine, Yukon Territory, July 6, 1919; Carmack's, Yukon Territory, July 14, 1919; Horse Falls, Yukon Territory, July 13, 1919; Selkirk, Yukon Territory, July 13, 1919; Dawson, Yukon Territory, July 7-10, 1919.

Also from Doctor Hewitt's collection, Glacier, British Columbia (normal form), July 28, 1916 (C. G. Hewitt), and

Fort Egbert, Alaska, June 2, 1906 (cotypes of *borealis* Lud.).

***Aëdes pionips* Dyar.**

Aëdes pionips Dyar, Ins. Ins. Mens., vii, 19, 1919.

Well distributed throughout the region, though never abundant. The adults are late in issuing, larvæ being found, together with *pullatus*, after most of the other forms had emerged. The species occurred rarely in the Skeena flood-pools, to judge by captured adults. No actual breedings of *pionips* were obtained from these pools.

The mesonotum has usually a clear yellow ground color, but at Atlin specimens occurred with the mesonotum gray.

Total, 122 specimens: Prince George, British Columbia, May 9, 13, 25-28, 1919; Terrace, British Columbia, August 12-14, 1919; Kwinitsa, British Columbia, May 25, 1919; Skagway, Alaska, June 24, 27, 28, 29, 30, July 1, 2, 1919; Atlin, British Columbia, July 22, 25, 1919; Carcross, Yukon Territory, July 27, 1919; White Horse, Yukon Territory, July 3, 16, 17, 18, 1919; Horse Falls, Yukon Territory, July 13, 1919; Dawson, Yukon Territory, July 7-13, 1919.

***Aëdes diantaeus* Howard, Dyar & Knab.**

Aëdes diantaeus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 758, 1917.

This species occurred not uncommonly in the lower Skeena Valley, issuing from the flood-pools in July. The female adults generally had the mesonotal stripes united in the manner of *puncator*, which they consequently much resembled. They are a little smaller and blacker, less robust, the legs having a blue-black appearance different from the brown-black of *puncator*.

The males do not swarm, but seize the females when approaching to bite. The males may be attracted to the presence of warm-blooded animals as *varipalpus* is; but no swarms were observed as with that species. While sitting on a log in dark woods at Terrace, B. C., in the forenoon, the weather being cloudy, a male and female were noted in the air, grappling. They flew to a neighboring twig and alighted, the fe-

male resting on her feet, the male underneath, grasping the female, his back to the twig. They remained there for several seconds.

Total, 158 specimens: Terrace, British Columbia, August 12, 13, 14, 1919; Salvus, British Columbia, June 9, 1919.

Aedes impiger Walker.

Culex impiger Walker, List Dipt. Brit. Mus., i, 6, 1848.

Aedes decticus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 737, 1917.

Mr. F. W. Edwards, after comparing Walker's type of *impiger* with Canadian specimens, remarks: "*C. impiger* Walk. is much more like *decticus* than any of the others you sent, but I should say is probably distinct. Both Walker's specimens have the front tibiae entirely dark, whereas your specimen of *decticus* has them pale beneath towards the tip. Anyway, *impiger* can hardly be the same as *punctor*, *lazarensis* or *intrudens* as the head has dark markings—and there are other points which would exclude all except *decticus*." ¹

After carefully restudying the material, I think that Mr. Edwards is right about the existence of two species, but not exactly as indicated. The two species are *decticus* and *prodotes*, the former being darker, more heavily marked, the latter paler, with markings diffused, generally absent. I tried to separate the species on locality, but that will not hold, as the habitats of the two overlap. *A. decticus* is not common anywhere, but extends across the continent; *prodotes* is very rare in the east, if it occurs at all, but common in the west.

The male genitalia differ as indicated (Ins. Ins. Mens., vii,

¹This identification of *impiger* duplicates the difficulty experienced with *Culex territans* Walker. In the monograph, we treated as *impiger* the species now called *intrudens*, following Dr. Felt's identification, which now proves to have been wrong. I proposed to drop *territans* as confusing, and on the same reasoning would have to drop *impiger*. I am afraid I will have to recede from this position. It will be necessary to cite "*territans* (*restuans*)" and "*impiger* (*decticus*)" for a decade or so, till the weight of literature accumulates to this usage. To cite either "*territans*" or "*impiger*" alone would be wholly ambiguous at present.

17, 1919). The larvæ are quite distinct. I have larvæ of *decticus* from Banff, Alberta (Dr. C. G. Hewitt), and from Dawson, Yukon Territory, agreeing essentially with *lazarensis*. In these larvæ the anal plate is more sharply marked than in the specimens I described from Plattsburgh, New York (Ins. Ins. Mens., vii, 21, 1919), ending sharply, but irregularly at some distance from the ventral line.

This species prefers densely forested country. The males swarm low near the ground, under trees, as described by me in error for *prodotes* (Ins. Ins. Mens., vii, 22, 1919). The swarming habits of *prodotes* are really quite different.

Total, 433 specimens: Edmonton, Alberta, May 1-5, 1919; Prince George, British Columbia, May 11-17, 19-22, 1919; Skagway, Alaska, June 24, 25, 1919; Atlin, British Columbia, July 22-25, 1919; White Horse, Yukon Territory, June 26-30, July 1-8, 16, 1919; Tahkeena River, Yukon Territory, July 19, 1919; Hootalinqua, Yukon Territory, July 6, 1919; Horse Falls, Yukon Territory, July 13, 1919; Dawson, Yukon Territory, July 7-11, 13, 14, 1919.

***Aedes prodotes* Dyar.**

Aedes prodotes Dyar, Ins. Ins. Mens., v, 118, 1917.

I referred to this as the "Rocky Mountain form of *decticus*" (Ins. Ins. Mens., vii, 22, 1919), but the appellation is incorrect, for while *prodotes* is not certainly known east of the Rockies, *decticus* crosses the range and inhabits the Yukon Valley, the two species occurring together. I previously called all specimens from the Rockies and westward *prodotes*, but now find that both occur at Banff. Thus *prodotes* is more of a high-altitude species, the records in the west cited by me, Field and Mt. Cheam, B. C., being correct. On the other hand, the troublesome female from White River, Ontario, June 25, 1907 (F. Knab), which was placed under *trichurus* in the monograph, and under *decticus* by me, appears in the light of latest information to be *prodotes*. If so, this is the easternmost record. The range of *prodotes* is to the north along the higher mountains of the Rockies into the Yukon Valley where it is the second species in abundance.

The coloration in the Yukon takes on a generally different character. Instead of dull stone gray, mixed with black and with dark brown shades and diffused lines, the mesonotum becomes bright clear gray with a little brown suffusion centrally. The brown may be absent, or overspread the whole mesonotum, sometimes with the addition of a pair of star-like whitish spots, but without blackish lines.

The larvæ occur mixed with those of *decticus*. I have specimens from Banff, Alberta (Dr. C. G. Hewitt), and from Atlin, British Columbia.

Larva. Head-hairs both single, long, the ante-antennal tuft in four. Lateral comb of the eighth segment of 12 large scales, each with a very long central thorn and small lateral spinules. Air tube about two-and-a-half times as long as wide, the pecten evenly spaced, followed by a two-haired tuft, after which are three widely detached teeth, the third toward the apex of the tube. Anal segment with a large plate, quadrately emarginate on the side posteriorly, the anterior part approaching the ventral line and irregularly edged.

Eggs of *prodotes* were obtained from captured females at White Horse. They are thickly fusiform, rounded, one side flattened, the ante-micropylar end more pointed than the other, shining black. They were deposited on the bottom of the glass jar, under moss, in little groups of half a dozen.

The adults prefer open or semi-open country. The males swarm, not over projecting objects, but over the spaces between. At White Horse and Atlin, the males were frequently seen just after sunset swarming singly or in small groups over bare ground between willows or small pines, some ten feet in the air. Under tall pines or in spruce forest they were never met with. The swarming habits as given by me (Ins. Ins. Mens., vii, 22, 1919) really belong to *decticus*.

Total, 1,973 specimens: (Yukon region) Skagway, Alaska, July 28, 1919; Inspiration Point, Alaska, July 28, 1919; White Pass, British Columbia, July 28, 1919; Atlin, British Columbia, July 22-25, 1919; Carcross, Yukon Territory, June 26, July 21, 27, 1919; White Horse, Yukon Territory, June 26-30, July

1-5, 7, 8, 16-18, 1919; Talkeena River, Yukon Territory, July 19, 1919; Byer's Camp, Yukon Territory, July 6, 1919; Big Salmon, Yukon Territory, July 15, 1919; Carmack's, Yukon Territory, July 14, 1919; Horse Falls, Yukon Territory, July 13, 1919; Knudson's Camp, Yukon Territory, July 6, 1919; Tantalus Mine, Yukon Territory, July 6, 1919; Selkirk, Yukon Territory, July 13, 1919; Dawson, Yukon Territory, July 7-11, 1919.

***Aedes intrudens* Dyar.**

Aedes intrudens Dyar, Ins. Ins. Mens., vii, 23, 1919.

This species occurred in early snow-pools and also in the Skeena flood-pools, which are filled by seepage and do not hold snow-water on account of the porosity of the ground. It was thus encountered in houses as late as August, contrary to its normal early habits. No differences were observed in these late specimens from normal early ones, either in coloration or habits. The species was not encountered in the Yukon watershed.

Total, 116 specimens: Terrace, British Columbia, August 12, 13, 14, 1919; Salvus, British Columbia, June 3, 4, 7, 8, 9, 10, 1919; Kwinitsa, British Columbia, May 22-26, August 14, 1919.

***Aedes pullatus* Coquillett.**

This species, which inhabits high altitudes in the Rocky Mountains southward to Colorado, comes down to the valley floor in the lower Skeena and the Yukon, and reaches sea-level at Skagway, Alaska.

The larvæ are to be found late in the season in the last remaining pools, together with *pionips*. The species was rather common at Dawson, my most northerly point, where males were seen swarming over willow bushes on the hillside after sunset, or even as early as 4 p. m. when the sun passed behind a temporary cloud.

Total, 643 specimens: Kwinitsa, British Columbia, May 29, 31, June 1, 2, 7, 1919; Skagway, Alaska, June 24-30, July 1-4, 6, 1919; Bennett, British Columbia, July 28, 1919; Atlin, British Columbia, July 23, 24, 1919; Carcross, Yukon Terri-

tory, July 21, 27, 1919; White Horse, Yukon Territory, June 27, 28, July 1-4, 9, 14, 18, 1919; Tahkeena River, Yukon Territory, July 19, 1919; Hootalingua, Yukon Territory, July 15, 1919; Tantalus Mine, Yukon Territory, July 6, 1919; Big Salmon, Yukon Territory, July 15, 1919; Carmack's, Yukon Territory, July 14, 1919; Dawson, Yukon Territory, July 7-13, 15-17, 19, 1919.

***Aedes excrucians* Walker.**

A male was demonstrated from White Horse, Yukon Territory. In the west this species is much less common than *fitchii*. Larvæ from Prince George, British Columbia, have the airtube somewhat shorter and stouter than in those from Massachusetts; but the detached pecten-teeth, comb-scales and head-hairs are the same.

The name *sansoni* D. & K. is available for the western form, but I think a separate name is unnecessary as there are practically no differences.

***Aedes stimulans* Walker.**

Culex stimulans Walker, List Dipt. Brit. Mus., i, 4, 1848.

Culex cantans Theobald (not Meigen), Mon. Culic., i, 401, 1901.

Culicada subcantans Felt, Bull. 97, N. Y. Sta. Mus., 448, 1905.

Culex (Culicada) stimulans Speiser, Schr. Phys.-ökon. Ges. zu Königsb., xlix, 391, 1908.

The preferred habitat of *stimulans* larvæ in the east is pools which have been actually overflowed by early high water, not seepage-filled. Such pools are common along streams in the Atlantic water-shed where the valleys are broad and low. In western Canada, however, the streams are deeply cut, with steep banks, for example the Saskatchewan or the Bow, and pools of this character do not occur. It has thus been necessary for *stimulans* to cease to exist in the west or change its habits. In writing the monograph, we were of the opinion that the species adopted the former alternative, as we state (vol. iv, p. 682): it "does not seem to be represented in the far west by an allied form." However, I have found it at Edmonton, Alberta, breeding in early marsh-pools with *decticus*

and *fitchii*. This appears to be a case of change of habits. Concomitantly therewith we find a change in structure, affecting, as would be expected, the larva only. The lateral comb-scales are reduced in number and have each a very long stout central thorn, with only small basal lateral fringes.

The male genitalia scarcely differ perceptibly. The basal lobe and spine are perhaps a little larger than in *stimulans*, but a trace less than in *mercurator*, described below.

No name exists applicable to this form; but as I have no larval material between Plattsburgh, New York, and Edmonton, Alberta, a gradation may exist, and I do not suggest a new name at present.

Aëdes mercurator, new species.

Female: Proboscis black; head with narrow yellow scales, almost replaced by a large black patch on each side. Mesonotum with pale yellow scales, a broad dark brown and black band in the middle; posterior side-stripes narrow, of the same color. Abdomen black, the basal segmental white bands narrow, obsolete posteriorly; a median white spot at base of second segment, forming large triangular patches on the sides; venter white, with median row of black spots. Legs black, with many white scales; femora white below; tarsi with white rings at the bases of the joints, broad on the hind legs on first to fourth joints. Wing-scales black.

Male: Similar. Genitalia: Side pieces three times as long as wide, conical at tip; clasp with long terminal spine; apical lobe conical, nearly nude, with only a few small setæ; basal lobe low-conical, transversely rugose, with non-projecting tubercles and short, rather curved setæ; a large spine on the basal side. Harpes and unci normal. Harpago with rather short stem, the filament longer than the stem, sickle-shape, a sharp angular expansion beyond the middle. Basal lobes short, with six long terminal spines.

Types, male and female, No. 22615, U. S. Nat. Mus.; Dawson, Yukon Territory, July 16, 1919 (H. G. Dyar).

Larva: Head hairs, upper 4 or 3, lower 2 or 1. Lateral comb of the eighth segment a large patch of scales, the tips

evenly feathered, the central spine sometimes a little stouter and longer. Air-tube about two-and-a-half times as long as wide, the pecten evenly spaced, running nearly to the middle, followed by a 6-haired tuft. Anal segment with the dorsal plate reaching two-thirds, irregularly incised.

Males were seen swarming at Dawson over willow bushes on the hillside after sunset. They were in small groups, flying rapidly from one place to another, much as with the allied *excrucians* and *fitchii*.

Total, 65 specimens: Dawson, Yukon Territory, July 7-11, 13, 15, 16, 17, 19, 1919.

This is very close to *stimulans* Walker, and I am not sure that it should be separated. I have proposed the new name largely on account of the discontinuous distribution. The western form of *stimulans* referred to above, which intervenes between eastern *stimulans* and *mercurator*, shows larval differences; yet here the typical larva reappears in abundance in the Yukon Valley. This valley becomes very broad in the "Flats" below Fort Yukon, Alaska, and doubtless *mercurator* has its stronghold here where many overflowed pools must occur.

The larva differs only in the head hairs, *stimulans* having them upper in 2, lower single (the statement in the monograph, page 681, is accidentally reversed), while *mercurator* has upper 4 or 3, lower 2 or single as stated.

In the male genitalia the spine of the basal lobe of the side-piece is longer in *mercurator* than in *stimulans* and a little more basally situated, being on the edge of the chitinization instead of a little removed therefrom. The basal lobe is round and full, openly tubercular with moderate short setæ, not "tubercular-expanded." In *stimulans* one of my mounts (Plattsburgh, New York) shows the basal lobe "tubercular-expanded" but this may be due to excessive pressure in preparation. Another mount from the same place does not show this peculiarity, neither do others from Detroit, Michigan, May, 1909 (B. F. Lowe), Arnprior, Ontario, May, 1917 (C. Macnamara), and Oxbow, Saskatchewan (F. Knab). In these

the basal lobe is low-rounded, openly tubercular, with fine setæ, smaller and less developed than in *mercurator*.

Aëdes fitchii Felt.

Male demonstrated from Dawson, Yukon Territory. Also from Saskatoon, Saskatchewan, June 7, 18, 1918 (A. E. Cameron), and Prince Albert, Saskatchewan, June 10, 1918 (A. E. Cameron), from Doctor Hewitt's collection.

Larvæ were obtained at Dawson. Head hairs, upper in threes, lower double or single. Comb scales of the eighth segment long and thorn-like with small lateral fringes. Tracheal tubes decidedly broad within the air-tube and not conspicuously angled in the eighth segment. Air tube shorter and stouter than usual.

These differ from Massachusetts specimens in the shorter tube with broader tracheæ, less strongly angled in the eighth segment, the strong median spine on the comb-scales and the less numerous head-hairs, which are, upper 3 or 4, lower 2 or 3 in typical *fitchii*. But they agree entirely in all these respects with *fitchii* larvæ which I obtained at Edmonton, Alberta.

The male genitalia show a slight progressive difference westward. In eastern specimens the filament of the harpago is shorter proportionately to the stem. Plattsburgh, New York, White River and Dryden, Ontario, Winnipeg and Aweme, Manitoba, are about alike. The lengthening of the filament appears gradually. Elkhorn, Manitoba, Oxbow and Prince Albert, Saskatchewan, appear intermediate, while Regina and Saskatoon, Saskatchewan, and Banff, Alberta, appear about like Dawson, Yukon Territory.

A western race of *fitchii* is thus indicated, but it would seem to appear so gradually that probably there is no sharp demarcation.

No varietal name is available, but it seems hardly worth while to propose one deliberately.

Total, 1,327 specimens, including *excrucians*, *stimulans*, *fitchii* and *mercurator*, most of the captured adults not being certainly separable: Edmonton, Alberta, May 11-20, 22, 25,

1919 (western forms of *fitchii* and *stimulans*); Prince George, British Columbia, May 28 (*excrucians*), September 9, 1919; Terrace, British Columbia, August 12, 13, 14, 1919; Skagway, Alaska, July 28, 1919; Bennett, British Columbia, July 28, 1919; Taku, British Columbia, July 22, 1919; Atlin, British Columbia, July 22-25, 1919; Carcross, Yukon Territory, July 21, 27, 1919; White Horse, Yukon Territory, June 26-30, July 1-5, 16, 17, 18, 1919; Tahkeena River, Yukon Territory, July 19, 1919; Hootalinqua, Yukon Territory, July 6, 1919; Tantalus Mine, Yukon Territory, July 6, 1919; Byer's Camp, Yukon Territory, July 6, 1919; Big Salmon, Yukon Territory, July 15, 1919; Carmack's, Yukon Territory, July 14, 1919; Horse Falls, Yukon Territory, July 13, 1919; Selkirk, Yukon Territory, July 13, 1919; Dawson, Yukon Territory, July 8-11 (*mercurator*), 20 (*fitchii*), 1919.

***Aedes callithotrys*, new species.**

Female: Proboscis black; head brownish yellow, a darker patch on each side, followed by flat white scales below. Mesonotum bronzy yellow scaled; a band of dark brown scales in the middle. Abdomen with black scales, transverse segmental and longitudinal median dorsal white lines, cutting the black into squares, sparsely dusted with white scales; venter pale, with a broken median black line. Wing-scales black and white, rather evenly mixed. Legs with femora and tibiae with many white scales; tarsi black, the joints dull white at base and apex.

Male: Mesonotum and abdomen all yellowish white scaled.

Genitalia: Side pieces three times as long as wide, conical; clasp with long terminal spine; apical lobe small, conical, haired like the rest of the surface; basal lobe expanded-tubercular, with many short setae, those along the inner margin somewhat stouter than the others, none developed into a spine. Harpes and unci normal. Harpagones with rather short stem, bearing several closely placed setae before tip; filament rather short, shortly sickle-shaped. Basal appendages moderate with five or six terminal spines.

Types, male and female, No. 22616, U. S. Nat. Mus.; White

Horse, Yukon Territory, June 26 and July 17, 1919 (H. G. Dyar).

This species is allied to *currici* and *campestris*, of the size of the latter, but differing in the male genitalia, which have no stout spine on the margin of the basal lobe of the side piece. It occurred in pine country from the White Horse Rapids to the Tahkeena River, about 25 miles, but was not met with elsewhere, except a single female at Skagway, which may have been carried down on the train.

The males swarm after sunset in little groups close to one side of the tops of small pines (resembling lodgepole pine).

The larvæ were not observed, all having emerged at the date of my visit.

This may not be specifically distinct from *campestris*. While male *campestris* from Regina and Carnduff, Saskatchewan, have the larger marginal spine on the basal lobe of the side piece as indicated above, a male from Salt Lake County, Utah, April 30, 1914 (C. T. Vorhies), does not show it distinctly, while a male from Oxbow, Saskatchewan, June 19, 1907 (F. Knab), shows the enlarged spine on one side but not on the other. Several of the marginal spines are enlarged in all the specimens, and whether there is a central one differentiated may prove an evanescent character.

The habits of *campestris* are undescribed, and the larva is unknown, and therefore I hold *callithotrys* apart for the present.

The species seems addicted to pine country instead of the open prairie, as with *currici*. Its distribution is peculiar and restricted. The swarming habits are markedly different from those of *currici*. Specimens recorded by me from Charlton Island in James Bay (Ins. Ins. Mens., vii, 38, 1919) are undoubtedly *callithotrys* or *campestris*. No males were obtained from this locality.

Total, 816 specimens: White Horse, Yukon Territory, June 26-July 18, 1919; Tahkeena River, Yukon Territory, July 19, 1919; Skagway, Alaska, June 25, 1919.

***Aedes curriei* Coquillett.**

No extension of range up the coast north of Vancouver Island was observed. The coast is steep and rocky, forming no marshes.

Total, 1 specimen: Edmonton, Alberta, May 19, 1919.

***Aedes canadensis* Theobald.**

Found only in the Fraser Valley near the southern part of the faunal region. It occurs also in the Kootenai region.

Total, 4 specimens: Prince George, British Columbia, May 22, 1919.

***Aedes vexans* Meigen.**

Absent from the Canadian Fauna in the west. It occurs in the bottom lands of the Fraser Valley.

Total, 161 specimens: Prince George, British Columbia, September 7-10, 1919.

***Aedes aestivalis* Dyar.**

Occurring in the southern fringe of the Canadian Fauna. I found a nice series in Doctor Hewitt's collection from Sicamous, and myself took a few specimens in the upper Fraser Valley.

Total, 2 specimens: Prince George, British Columbia, September 7, 10, 1919.

Also from Doctor Hewitt's collection, Sicamous, British Columbia, July 28, 1916 (C. G. Hewitt).

***Aedes cinereus* Meigen.**

Extending throughout the Canadian region, though always rare. The most abundant occurrence was in the Skeena flood-pools, where *cinereus* was second in importance. In estimating the abundance of *cinereus* in the Skeena Valley, I use the data from larval emergences. The adults have habits of their own, and in the deep forest, which the other flood-pool species frequented, *cinereus* was extremely rare. On the other hand, collecting under a solitary tree amid bushes by the river-bank where the surroundings were light and open, nothing but *cinereus* came.

Total, 91 specimens: Prince George, British Columbia, September 9, 1919; Terrace, British Columbia, August 11-14, 1919; Salvus, British Columbia, June 7-10, 12, 1919; Kwinitsa, British Columbia, June 1, 4, 1919; Atlin, British Columbia, July 23, 1919; White Horse, Yukon Territory, June 29, July 2, 4-7, 9, 11, 15, 1919; Horse Falls, Yukon Territory, July 13, 1919; Dawson, Yukon Territory, July 10, 11, 1919.

***Aëdes varipalpus* Coquillett.**

The species occurs in the southern part of the Canadian region where suitable tree-holes are present, not in the spruce forest.

It was impossible to sit for more than a few minutes in the woods at Terrace without a swarm of males forming close by elbow or knee, attacking the females as these came to bite.

Total, 40 specimens: Terrace, British Columbia, August 12-14, 1919.

***Culicella dyari* Coquillett.**

The species extends throughout the Canadian region, though always rare.

Total, 2 specimens: Kwinitsa, British Columbia, June 10, 1919; White Horse, Yukon Territory, July 3, 1919.

***Culiseta impatiens* Walker.**

The species occurs throughout the region and also in the Coast Region. I give all the localities together.

In the sandy flats at the mouth of the Skagway River, an incipient race occurs. The size is distinctly smaller than normal, and the habits are divergent. The egg-boats are narrow and long, as in *incidens*, not broad and rounded or triangular as normally in the species, and are deposited in overflowed pools in the sand and even in protected water-barrels, all quite contrary to the usual sylvan habits of *impatiens*. However, I could not demonstrate any positive differences. The divergent habits have not yet been followed by structural change.

Total, 220 specimens: Terrace, British Columbia, August 14, 17, 20, 23, 1919; Salvus, British Columbia, June 3, 1919;

Prince Rupert, British Columbia, May 13–June 13, July 8, 9, 1919; Ketchikan, Alaska, August 8, 1919; Cape Fanshaw, Alaska, June 22, 1919; Skagway, Alaska, June 24, July 1, 2, 3, 27, 28, 30, 31, August 1–5, 1919; Taku, British Columbia, July 22, 1919; Atlin, British Columbia, July 24–27, 1919; Carcross, Yukon Territory, July 27, 1919; White Horse, Yukon Territory, June 27–30, July 4, 1919; Dawson, Yukon Territory, July 9, 14, 15, 16, 18, 1919.

The species evidently ranges all down the Yukon. I have specimens through the U. S. Biological Survey as follows: Flat, Alaska, June 12, 1917 (A. H. Twitchell); Beaver Mountains, Alaska, May 26, 1917 (A. H. Twitchell); Iditarod, Alaska, June 12, 1918 (Alice Twitchell).

Culiseta incidens Thomson.

Throughout the Canadian and Coastal regions, preferring artificial pools or barrels for oviposition. In the Yukon Valley the black markings on the wings are commonly very much reduced; the species being with difficulty separated from *impatiens* at casual glance. I give all the localities together.

Total, 105 specimens: Hazelton, British Columbia, September 7–10, 1919; Prince Rupert, British Columbia, May 30–June 9, 1919; Cape Fanshaw, Alaska, June 22, 1919 (the specimen plainly seen, but escaped capture); Atlin, British Columbia, July 22, 23, 24, 26, 27, 1919; White Horse, Yukon Territory, June 28–30, July 1–4, 1919; Dawson, Yukon Territory, July 15, 16, 18, 19, 1919.

Culiseta alaskaënsis Ludlow.

Not uncommon in the Yukon Valley. The species is addicted to grassy pools, such as occur along river-beds, not in forest. It is absent from the forested Canadian region, but follows the mountains from the Yukon southward onto the Canadian plains.

Total, 78 specimens: Edmonton, Alberta, April 27, 1919; Atlin, British Columbia, July 25, 26, 1919; White Horse, Yukon Territory, June 26–30, July 1–4, 16, 1919; Selkirk,

Yukon Territory, July 13, 1919; Dawson, Yukon Territory, July 18, 1919.

Also Calgary, Alberta, April 14, 1913 (N. Criddle), from the collection of Dr. C. Gordon Hewitt.

This species extends also well down the Yukon. Dr. Ludlow's types came from Eagle, Alaska, and I have, through the U. S. Biological Survey, specimens from Beaver Mountains, Alaska, May 15, 28, 1917 (A. H. Twitchell).

Anopheles occidentalis Dyar & Knab.

A specimen was taken on the deck of the steamship *Dawson* on the Yukon River while making a landing.

Total, 1 specimen: Hootalinqua, Yukon Territory, July 6, 1919.

Also Aweme, Manitoba, April 16, 1915 (N. Criddle), from the collection of Dr. C. Gordon Hewitt.

II. PACIFIC COAST FAUNA

The moist winds from the Pacific, striking the high coastal mountains, produce an almost continual rain, from which peculiar conditions have evolved. The ground is a mass of peat, roots and moss, designated as muskeg, which retains water for a considerable time. In the spring, flat, shallow, sharp-edged pools are frequent, not in the bottoms of valleys or even in depressions, but right on exposed tops or sides of hills. Some of these pools remain more or less full all summer and all leave permanent beds from which grass is absent. Plate I, figure 1, shows Ketchikan, Alaska, as seen from tide water, the high mountains in the back being entirely obscured by the small hills in the foreground, but the precipitous nature of the coast is evident, the town being perched on a steep hillside. Figure 3 is a view of Kaien Island from the hill across the bay, the scattering town at the base of the hill being Prince Rupert, British Columbia. The water at the right is the estuary of the Skeena River. Figure 2 is a view looking down from the center of Prince Rupert from the spot marked with an arrow in figure 3. This place looks level, but is in reality a high hill

in the center of the town where the reservoir stands. The view shows a number of muskeg-pools in the foreground, situated on the steep hillside, which is much steeper than appears, due to the camera having been pointed downward in taking the view.

These conditions have produced an entire change in the species of *Aedes* for the region. The whole Canadian fauna is completely cut off, not a species surviving, while three endemic species take its place. These three species are all derivatives of *punctor*, which we have found to be the most hardy member of the Canadian fauna, but they are specifically distinct therefrom, though closely allied among themselves. The *Culiseta*, inhabiting permanent pools in the bottom lands, find conditions here similar to those elsewhere, and the species have not changed.

The Coastal Region extends northward as far as the island barrier. North of Cape Spencer I do not yet know what conditions obtain. The region extends southward, west of the Coast Range, to the United States, being cut narrowly by the Skeena River and more broadly by the Fraser. It embraces all of Vancouver Island. In western Washington and Oregon it broadens out, embracing the region between the Cascades and the sea. The rainfall is less continuous here, but the same general characters persist. Its exact southern limits are unknown to me, owing to lack of collections. The upper valleys of the Olympic Mountains are unexplored, as are most of the isolated peaks from Mount Baker to Mount Shasta. In the mountain meadows of the Mount Rainier region no species of this group occurred. We found *altiusculus* (a derivative of the Californian *tahoënsis*), although *aboriginis*, the dominant Coastal species, occurred in the foothills.

East of the Cascades arid conditions immediately supervene, with the appropriate fauna; so it is this Coastal Region which widely intervenes between the Canadian Fauna and that of the Californian mountains, and permits the existence of a separate fauna there. A comparative list of the Canadian and Californian species may be of interest. Some of the species may

still be identical (males and larvæ of some unknown) though most are plainly distinct, and of one pair (*impiger* and *ventrovittis*) I am not sure of the correspondence.

<i>Canadian representative.</i>	<i>Californian representative.</i>
<i>Aedes punctor</i> Kirby	<i>Aedes hexodontus</i> Dyar
<i>lazarensis</i> F. & Y.	<i>tahoënsis</i> Dyar
<i>pionips</i> Dyar	(unrepresented)
<i>impiger</i> Walk. (<i>decticus</i> H., D. & K.)	<i>ventrovittis</i> Dyar
<i>prodotes</i> Dyar	<i>cataphylla</i> Dyar
<i>intrudens</i> Dyar	<i>fisheri</i> Dyar
<i>diantaeus</i> H., D. & K.	(unrepresented)
<i>pullatus</i> Coq.	(unrepresented)

Of the *excrucians* group, the two Californian species, *in-crepitus* Dyar and *palustris* Dyar, are representatives of *mutator* Dyar and *mimesis* Dyar of the arid region, not of the three species of the Canadian one. The ubiquitous *vexans* Meigen and *cinereus* Meigen occur in both, the latter also invading the Coastal fauna to some extent. Besides the strictly prairie species, *canadensis* Theob. is really an intrusion in the Canadian fauna proper, and its absence from the Californian mountains is reasonable. *Culiseta*, *Culex* and *Anopheles* are entirely oblivious of these regions, their distribution depending upon other factors.

***Aedes cyclocerculus*, new species.**

Female: Head brownish yellow scaled, dull whitish on the sides; mesonotum brownish yellow scaled, whitish around the antescutellar space; two diffused dark brown median bands; posterior-lateral stripes broad, black-brown, distinct. Abdomen with basal segmental white bands, widening at the sides; venter whitish-scaled, the segments black-scaled on the sides. Legs black, femora white below; knee-spots white.

Male: Ground-color scales lighter yellow and sparser than in the female, the dark markings broad. White abdominal bands narrow; ventral scaling mixed with black. Genitalia: Side pieces over three times as long as wide, the clasp with

long terminal spine; apical lobe low-conical, large, with dense recurved or flattened short setæ; basal lobe quadrately expanded, tubercular-setose, the setæ longer and denser about the marginal spine, which is stout and strongly recurved. Harpago with short hirsute stem, the filament rather broadly fusiform with pointed tip, about one-half as long as the stem. Harpes and unci normal. Basal appendages rather long, with five or six terminal and sub-terminal spines.

Types, male and female, No. 22617, U. S. Nat. Mus.; Prince Rupert, British Columbia, May 11, 12, 1919 (H. G. Dyar).

Larva: Head-hairs in twos (upper occasionally 3 or 1, lower rarely 1). Lateral comb of the eighth segment of six or seven large scales, each with long pointed tip, shortly and sparsely fringed at base. Air-tube two-and-a-half times as long as wide; pecten of evenly spaced teeth, followed by a 5-haired tuft. Anal segment ringed by the plate, short and quadrate, the ventral brush obliquely posteriorly directed.

Larvæ in muskeg-pools early in May. The larvæ are small, darkly colored, and occurred in considerable numbers in one pool.

Total, 85 specimens: Prince Rupert, British Columbia, May 11-31, 1919; Ketchikan, Alaska, June 20, August 6, 8, 1919; Cape Fanshaw, Alaska, June 22, 1919; Juneau, Alaska, June 23, 1919.

***Aedes leuconotips*, new species.**

Female: Head yellow-brown scaled, with whitish diffuse spots at the sides. Mesonotum yellow-brown, with two diffuse broad median dark brown bands; posterior lateral stripes faint, showing only traces. Abdomen with basal white segmental bands, widening at the sides; venter grayish white scaled. Legs black, femora white beneath; knee-spots white.

Male: Ground-color scales paler than in the female and sparser. Posterior lateral bands broad and distinct, similar to the median ones. Venter mixed with black scales, predominating on tips of segment. Genitalia: Side pieces over three times as long as wide, the clasp with long terminal spine;

apical lobe low-conical, large, with dense recurved or flattened short setæ; basal lobe quadrately expanded, tubercular-setose, the setæ longer and denser about the marginal spine, which is very stout and contrasted. Harpago with short hirsute stem, the filament rather broadly fusiform with pointed tip, about one-half as long as the stem. Harpes and unci normal. Basal appendages rather long, with five or six terminal and sub-terminal spines.

Types, male and female, No. 22618, U. S. Nat. Mus.; Prince Rupert, British Columbia, May 26, 30, 1919 (H. G. Dyar).

Larva: Head-hairs in twos, or the lower single; lateral comb of the eighth segment of seven large scales, each with long pointed tip, shortly and sparsely fringed at base. Air-tube two-and-a-half times as long as wide; pecten of evenly spaced teeth, followed by a 6-haired tuft. Anal segment ringed by the plate, rather short and broad, the ventral brush obliquely posteriorly directed.

Larvæ in muskeg-pools in May. The larvæ are pale in color, whitish, and occurred sparsely in the pools, in two cases but one larva in a pool.

Total, 44 specimens: Prince Rupert, British Columbia, May 22–June 13, 1919; Ketchikan, Alaska, June 20, 1919; Cape Fanshaw, Alaska, June 22, 1919; Juneau, Alaska, June 23, 1919.

***Aedes aboriginis* Dyar.**

Aedes aboriginis Dyar, Ins. Ins. Mens., v, 99, 1917.

The larvæ from Prince Rupert differ slightly from those from the type locality (Mount Rainier, Washington). The head hairs are more numerous, upper in 5, lower in 3 or 4, instead of upper in 3 or 4, lower in 2 or 3. The comb-scales of the eighth segment have the central spine more sharply differentiated—the scale should be described as with a central thorn and long lateral spinules rather than evenly spined. Otherwise no differences appear.

The larvæ frequent pools of a semi-stagnant character, or drainage pools, not typical muskeg pools. These pools are

largely created by artificial conditions—most of my larvæ of *aboriginis* occurred in the town proper. The dark pools in the stream-beds in the forest, which are heavily infested with *Eucorethra*, yielded no *Aedes* larvæ, one third-stage skin only rewarding search, although these would seem to be the only habitat of *aboriginis* in a state of nature. Civilization, if not too highly organized, would seem to be beneficial to the species.

Total, 382 specimens: Prince Rupert, British Columbia, May 9–June 17, 1919; Cape Fanshaw, Alaska, June 22, 1919.

Also in Doctor Hewitt's collection, Royal Oak, British Columbia, May 4, 1917 (R. C. Treherne).

These three species, *cyclocerculus*, *leuconotips* and *aboriginis*, with *hexodontus* of the Californian Sierra Nevada range and *punctor* of the Canadian fauna, form a closely allied group. The first two inhabit typical muskeg pools in the northern rainy Pacific strip; *aboriginis* occupies drainage or casual, often dirty pools in the same general region, but extends southward over western Washington; *hexodontus* occurs in the Californian mountains, inhabiting open marshy pools, often much of the typical muskeg type, while *punctor* extends throughout the Canadian fauna from the Atlantic to the Pacific.

On colorational characters, the species group thus:

Mesonotum typically with single quadrate median dark stripe,

punctor Kirby

* Mesonotal stripe divided.

Typically, median and posterior-lateral stripes equally developed,
aboriginis Dyar, *leuconotips* Dyar, *hexodontus* Dyar

Posterior lateral stripes darker and more distinct than the median,
cyclocerculus Dyar

On genitalic characters the grouping is as follows, replacing dichotomy 21 of my table (Ins. Ins. Mens., vi, 78, 1918):

Spine of basal lobe of side piece stronger than accompanying setæ,
but not strongly differentiated.....*punctor* Kirby, *aboriginis* Dyar
Spine of basal lobe much stronger than the accompanying slender
setæ and well differentiated,

hexodontus Dyar, *cyclocerculus* Dyar, *leuconotips* Dyar

On larval characters they group thus :

Anal segment with the plate separated ventrally; upper head hairs
 3-5, lower, 2-4.....*aboriginis* Dyar
 Anal segment ringed by the plate; head-hairs single or double,
punctor Kirby, *hexodontus* Dyar, *cyclocerculus* Dyar, *leuconotips*
 Dyar

The specific localities for *Culiseta impatiens* Walk. and *C. incidens* Thom. have been included under the heading of the Canadian Fauna. In the southern part of the Coast Region there is an intrusion of *Culex tarsalis* Coq., *Culex saxatilis* Grossb. and *Aedes palustris* Dyar (Royal Oak, British Columbia, April, 1917, R. C. Treherne, through Dr. C. G. Hewitt), of *Aedes astivalis* Dyar (Nanoose Bay, British Columbia, August 1, 1903, J. Fletcher), of *Aedes varipalpus* in tree holes, and of *Aedes currici* Coq. as a salt-marsh breeder, besides *Anopheles* sp. (Ins. Ins. Mens., v, 102, 1917), but these species are not found farther north in the typically rainy belt. The specimen which I recorded from the Olympics (Ins. Ins. Mens., v, 98, 1917) as *increpitus* (?) seems on reëxamination to be certainly *palustris*; but there remains the large red *aloponotum* Dyar, about which nothing positive can be said until males and larvæ are at hand.

A SECOND CULEX OF THE SUBGENUS TRANSCULICIA DYAR

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

***Culex (Transculicia) petersoni*, new species.**

Male. Proboscis with a broad whitish ring beyond the middle. Palpi slightly exceeding the proboscis, with small white rings at the bases of the joints and the middle of the long joint. Femora with whitish tip, the tarsal joints narrowly dull white at bases and apices. Abdomen with basal segmental whitish bands, widening at the sides; venter white, with some black scales at the tips of the segments toward the base. Pleura pale, with six brown spots. Antennæ plumose,

the short joints white, with black rings, the last two joints long and dark. Front tarsi with one large and one smaller claw, each with a tooth; hind small, equal and simple.

Genitalia. Side pieces large and stout, about twice as long as wide, a large excavation at base reaching beyond the middle. At the apex of this a stout lobe, bearing at tip two very stout blade-like short spines, and on the side a patch of about six short setæ, one of which is longer and stouter than the others. A small dense patch of setæ at base of lobe and another midway between it and the tip; apex rather densely haired. Clasp-filament stout, bent near base. Harpes rather weakly chitinized, with a basal arm, the tip densely spinose; unci showing four plates, the first triangular, slender, well chitinized; second short, thick, curved outward at tip, lamellate, the margin serrate, very strongly chitinized; third long, tooth-like; fourth short, with an outwardly directed point at tip. No basal appendages; no scales.

Female. All the specimens have been badly handled and are practically denuded. Mesonotum apparently with narrow curved light bronzy brown scales. Proboscis with a broad white ring a little beyond the middle, as in the male. Tarsal rings small, yellowish white. Abdomen with narrow basal segmental white bands.

Type, male, No. 22689, U. S. Nat. Mus.

Three males and six females, St. Thomas and St. John, Virgin Islands (Dr. E. Peterson), sent under transmission numbers St. J.-12 and D-1.

In reply to inquiry, Doctor Peterson writes: "The larvæ of St. J.-12 were caught in a large pond very near the seashore at Leinster Bay, St. John, Virgin Islands of the U. S., on the 22nd of October, 1919, and the adults emerged on the 26th October, 1919. This pond through the present rainy season constitutes for all practical purposes a fresh water pond. It is a very shallow pond, which during high tide will receive the tide water.

"The larvæ of D-1 were caught in fresh water pools in the upper part of Dominigade Gut, so called, St. Thomas. The

pools in said gut are continuously supplied with water from a well on the hill-side. These pools contain algæ. The larvæ of D-1 were caught on October 26, 1919, and the adults emerged on November 1, 1919."

Larvæ from Leinster Bay, from which typical *petersoni* were bred, although not isolated, are as follows:

Head rounded, flat, about as broad as long; antennæ moderate, a large tuft at the outer fourth, the part beyond it slender; head-hairs fine and pale, in tufts of about four each. Lateral comb of the eighth segment a patch of about 30 small remote spines with narrowly expanded feathered tips. Air-tube about five times as long as wide, thick and nearly uniform, finely pilose, especially toward tip; pecten of about ten teeth, the outer ones widely separated, and reaching beyond the basal third of the tube; eight large hair-tufts along the posterior margin of the tube, the basal one well within the pecten and the second nearly so, the last one being subapical; tracheæ in the tube broad and straight. Anal segment slender, with a small dorsal chitinous saddle. Anal gills only two, short, sac-like, firm and yellowish.

Culex (Transculicia) bahamensis Dyar & Knab.

Culex bahamensis Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 206, 1906.

Culex bahamensis Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., ii, pl. 107, fig. 359, 1912.

Culex bahamensis Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iii, 300, 1915.

Culex (Transculicia) eleuthera Dyar, Ins. Ins. Mens., v, 184, 1917.

Culex (Transculicia) eleuthera Dyar, Ins. Ins. Mens., vi, 100, 1918.

From the close similarity of the larva of *petersoni*, just described, with *Culex bahamensis* D. & K., hitherto known only as larva, it is evident that *eleuthera* Dyar is the adult of *bahamensis* larva, and that the above synonymy will obtain.

NEW MOTHS FROM MEXICO

(Lepidoptera)

By HARRISON G. DYAR

SATURNIIDÆ

***Agapema muellerana*, new species.**

Antennæ light yellow. Fore wing slightly excavated on the outer margin, the apex rounded; soft gray-brown; inner line on both wings blackish, diffused, rather thick; outer line double, wavy on the veins, the inner segment blackish and concrete, the outer segment broader and irrorate with white scales; a carneous shade at apex with a truncated lunule, red without, black within, edged without by pale rosy irrorations. Discal mark rounded, a black center with upright white line, surrounded by a brown annulus and a ring, the latter black without, dark red within with a white arc. Hind wing with the costa broadly pale luteous and no apical mark. Discal mark a little more elongate than on fore wing, with the white arc longer.

Beneath light fawn-color, the inner line and outer segment of the outer line distinct and blackish. Discal marks browner than above, the white arc obsoletely continued as a ring. Expanse, 97 mm.

Type, male, No. 22749, U. S. Nat. Mus.; Mexico City, Mexico, June, 1919 (R. Müller).

One hind wing of the type is broken; but Mr. Müller has taken only two specimens of the species in twelve years, and both reached him in an injured condition.

ARCTIIDÆ

***Hypocrisias velivolans*, new species.**

Fore wing straw-yellow, rather thickly irrorated with fuscous, defining indistinctly a basal and discal cluster of spots and more distinctly two outer rows. Hind wing shaded with fuscous, especially along inner margin, the veins outlined in pale. The wings are square and broad as in the *minima* group;

but the spots are concolorous with the ground and not whitish. Nearest *gemella* Schaus; but that is distinctly a yellow species, and has the outer two rows of spots more rounded, irregular and the rows more separated.

Types, male and female, No. 22750, U. S. Nat. Mus.; Mexico City, Mexico, June, 1919 (R. Müller).

Exemasia ochropasa, new genus and species.

Structure of *Hypocrisias*, but the proboscis aborted. The abdomen is dorsally clothed with rough hair as in *Apantesia*, from which the present genus differs in the long hair of the head and the palpi below.

Fore wing dark straw-yellow, hind wings lighter, without marks.

Type, male, No. 22751, U. S. Nat. Mus.; Mexico City, Mexico, June, 1919 (R. Müller).

NOCTUIDÆ

HADENINÆ

Eriopyga agrotiformis, new species.

Fore wing lilaceous brown; a black point near base, black in the cell between the stigmata, and two subapical subterminal black points. Inner line obscure blackish, double, waved; outer line only a trace; subterminal very faint, pale, even. Orbicular of the ground-color, large, oblique, incompletely outlined; reniform pale, yellowish, outlined in black without, but not above or below; a pale reddish line at base of fringe. Hind wing pale sordid, shaded broadly with dark fuscous over apex and outer margin. Expanse, 30 mm.

Type, male, No. 22752, U. S. Nat. Mus.; Zacualpan, Mexico, June, 1919 (R. Müller).

ACRONYCTINÆ

Emarginea minastes, new species.

Fore wing silvery white, mostly overspread with sordid yellow (olive green?). A black mark at base on submedian, triangularly widened at tip; a black area between inner and outer lines above vein 2, cut by a square patch from costa,

which is yellow (green?) above and white below, forming a notch at middle at end of cell. Outer line dentate on veins 3 and 4, silvery white; a large black spot at tornus, cut by it. Hind wing white with shaded gray discal dot and outer macular line. Expanse, 26 mm.

Type, male, No. 22753, U. S. Nat. Mus.; Zacualpan, Mexico, June, 1919 (R. Müller).

ERASTRIINÆ

Paracodia globifrons, new species.

Fore wing blackish; inner line indistinct, angled on submedian and vein 1; median vein lined in pale yellow beyond this to origin of veins 3-4; a pale yellow line surrounds the narrow oblique orbicular, runs parallel to median vein, loops over reniform, runs parallel to median vein below it to an arc at end of obsolete claviform, the enclosed area lighter and reddish. Outer line dark, edged with pale yellow on both sides, the edges widening below, straight, angled on discal fold, and slightly at submedian. A blotchy pale irregular subterminal line, squarely indented opposite cell. Hind wing blackish. A pale line at base of fringe on both wings. Expanse, 33 mm.

Type, female, No. 22754, U. S. Nat. Mus.; Zacualpan, Mexico, July, 1919 (R. Müller).

Eustrotia retroversa, new species.

Fore wing yellowish from base to middle, shaded with brown at the middle, and a little brown dot on inner margin at basal third. Outer area purplish; middle line very slightly curved, whitish. Traces of a widely angular pale subterminal line. Hind wing fuscous, pale toward base, dark outwardly. Expanse, 17 mm.

Type, female, No. 22755, U. S. Nat. Mus.; Zacualpan, Mexico, May, 1919 (R. Müller).

Eustrotia mesosecta, new species.

Fore wing olive-brown from base to middle, lighter in the center of the area, dark on inner margin at the inception of the obsolete inner line; outer area carneous brown. Middle line erect, whitish, curving out a little and slightly angled on

submedian; a small black half-reniform just beyond it. Subterminal line irregularly dentate, blackish. Hind wing fuscous, pale at base, dark outwardly. Expanse, 19 mm.

Type, female, No. 22756, U. S. Nat. Mus.; Zacualpan, Mexico, June, 1919 (R. Müller).

CATOCALINÆ

Safia holologica, new species.

Fore wing with the general maculation of *S. amata* Druce (*distilla* Dyar). Inner and median lines double, white, powdery, outbent below vein 1; orbicular a white point, dark-centered; reniform a white arc within with dot in center and a spot beyond. Outer line black, broken; dentate, strongly retracted under cell. Subterminal line white, dentate and broadly waved, forming a number of sharp angles below vein 2; a double black line at base of fringe, separated by white cusps. Hind wing discoloured, yellowish fuscous, with two median dark lines showing by transparency from below; outer area blackish shaded, cut by a pale subterminal shade. Fringe white, irrorate with black, with a black line at the base, forming points at the ends of the veins. The abdomen has dorsal crests on six segments, which are partly white. Expanse, 54 mm. On the under side the hind wings have a white ground, with two median, black, denticulate lines; fore wing blackish and white, simply marked.

Type, female, No. 22757, U. S. Nat. Mus.; Zacualpan, Mexico, May, 1919 (R. Müller).

GEOMETRIDÆ

GEOMETRINÆ

Selidosema monotonaria, new species.

Both wings dark gray, irrorate with black; a round black discal point; an outer row of black dots on the veins, followed here and there by white scales. Beneath paler, the hind wing especially whitish toward the base. Expanse, 35 mm.

Type, male, No. 22758, U. S. Nat. Mus.; Mexico City, Mexico, April, 1919 (R. Müller).

LARENTIINÆ

Tephroclystia endotherma, new species.

Fore wing dark gray, a warm brown shade occupying the median area below cell. Discal dot black, narrow. Lines faint, pale, not waved. Traces of blackish subterminal line on lower half of wing. Hind wing sordid whitish, narrowly gray on the inner area; discal dot and terminal line black, the latter broken on the veins. Expanse, 19 mm.

Type, female, No. 22759, U. S. Nat. Mus.; Mexico City, Mexico, June, 1919 (R. Müller).

Tephroclystia exophychra, new species.

Fore wing dark gray, the terminal area shaded with pale yellowish, forming an oblique shade from apex and a broad blotch in the middle, the two connected inwardly; discal dot black; outer line showing black streaks centrally; no other distinct lines. Hind wing pale sordid, gray along the inner margin, the gray running half way across the wing in half a dozen wavy lines. A terminal black line on both wings, cut by the veins. Expanse, 20 mm.

Type, female, No. 22760, U. S. Nat. Mus.; Mexico City, Mexico, June, 1919 (R. Müller).

THYRIDIDÆ

Thyridopyralis illustrata, new species.

As in *T. randialis* Dyar, but differing in detail: The median area of the wing is nearly wholly gray, showing only a little white around the discal mark; terminal space also gray, except for a small light spot below the middle. The species seems larger than *randialis*. Expanse, 32 mm.

Type, male, No. 22761, U. S. Nat. Mus.; Zacualpan, Mexico, June, 1919 (R. Müller).

PYRALIDÆ

PYRAUSTINÆ

Pachyzancla intinctalis, new species.

Pale straw-yellow, lines dark brown; inner line arcuate, even; orbicular a dot, reniform an arc; outer line slightly ex-

curved, running in along the interspace 2-3, then nearly straight to inner margin; subterminal line a trace; a dark line at base of fringe. Hind wing with a faint discal dot, outer, subterminal and terminal lines as on fore wing. A brown streak at base of costa. Expanse, 21 mm.

Type, male, paratype, female, No. 22762, U. S. Nat. Mus.; Zacualpan, Mexico, May, 1919 (R. Müller); Guadalajara, Mexico (Schaus collection).

CHRYSAUGINÆ

Tetraschistis decadens, new species.

Fore wing vinous gray, the basal third a little yellowish tinted, lines very faint, dark, obscurely double and drawn toward the center of the wing. A small dark discal dot. Hind wing pale at the base, dark gray on the outer half. Expanse, 21 mm.

The male has a little excavation of the costa just beyond the middle, marked with white.

Types, male and female, No. 22763, U. S. Nat. Mus.; Mexico City, Mexico, May, 1919 (R. Müller).

PHYCITINÆ

Mescinia indecora, new species.

Fore wing gray, with a lilacine tint, irrorated with blackish, especially in a broad shade along submedian from base to middle. Lines very indistinct, the outer shaded, running obliquely inward from near apex. Discal dot large, blackish, somewhat diffused. Hind wing translucent whitish, the veins and terminal line gray; a yellowish shade along inner margin. Expanse, 23 mm.

Similar in size to *M. discella* Hampson, but obscurely marked.

Type, female, No. 22764, U. S. Nat. Mus.; Zacualpan, Mexico, June, 1919 (R. Müller).

NOTE ON THE SUBGENUS NEOCULEX OF CULEX

(Diptera, Culicidæ)

By HARRISON G. DYAR

The subgenus *Neoculex* (Dyar, Proc. Ent. Soc. Wash., vii, 45, 1905) apparently finds a synonym in *Maillotia* (Theobald, Mon. Culic., iv, 274, 1907). The species have the white abdominal bands apical on the segments instead of basal; the male genitalia are distinctive in lacking the second uncal plate. The common American species has been known as *Culex territans* Walker, but erroneously. The oldest available name for it appears to be *Culex testaceus* van der Wulp. (Discussed by me, Ins. Ins. Mens., vii, 36, 1919.) A closely allied form occurs in southern Europe, of which I have a male from Italy by the kindness of Dr. M. Bezzi. The genitalia differ from *testaceus* in having the lobe of the side piece furnished with two long filaments, two flattened setæ and six small setæ, instead of two long filaments, three flattened setæ and two normal setæ. The form has been described by Brolemann as *Culex pyrenaicus* (Ann. Soc. Ent. France, lxxxvii, 427, 1919); but I think an older name for the same will be found in *Culex modestus* Ficalbi (Bull. Soc. Ent. Ital., xxi, 93, 1889). Ficalbi described from one female, but later he figures the male genitalia, which appear to agree. He does not mention the pale apical bands on the abdomen, but as these are often narrow, it occurs to me that they may have been overlooked.

A second European species falling in *Neoculex* is *C. hortensis* Ficalbi (Bull. Soc. Ent. Ital., xxi, 27, 1889). The male has a very peculiar modification of the lobe of the side piece, one of the rods being separated from the others and transformed into a tooth; but the second uncal plate is wholly lacking. I do not follow Blanchard and other French authors in referring *hortensis* to *geniculatus* Olivier (See Edwards, The Entom., xlix, 107, 1913). I infer that Theobald's *Maillotia pilifera* is a synonym of *hortensis* from Mr. Edwards' memorandum in a copy of his paper on African Culicidæ (Bull. Ent. Res., iii, 33, 1912) which I have from him.

NEW GENERA AND SPECIES OF CHALCID-FLIES
FROM AUSTRALIA*(Hymenoptera)*

By A. A. GIRAULT

The following are from Queensland unless otherwise stated.

Euceratoneura, new genus.

Female: Like *Tetrastichus* but with habitus of a eucharid, the compressed abdomen with a stout, wider than long petiole, the antennæ inserted distinctly *above* the middle of the face and with four distinct, subequal ring-joints. Mandible 3 obtuse. Type, the following species.

Euceratoneura shellyi, new species.

1.25 mm. Black green, wings clear; clypeus, knees, tibiæ and scape yellowish brown. Funicles one-fourth longer than wide, subequal pedicel, clubs a bit shorter, 3 merely pointed. Head finely shagreened and with numerous scattered setigerous punctures. Thorax with the usual sculpture, no setæ, the propodeum with but the median carina, longer laterad, its caudo-lateral angle rounded. Abdomen 2 a fourth the surface, sharply incised at caudal margin mesad, the others at least no longer. Scutellum 4, submarginal vein, six or more setæ. Stigmal vein moderately long. Wings wide.

Little Mulgrave River, sweeping banks, jungle, August.

Closteromyia, new genus.

Like description *Closteromophale* but differing principally in the form of the distal funicle joints which are bottle-shaped, 2-4 oval with a long neck distad, 1 oval, 3 and 4 each with a whorl of not long, stiff setæ, 2 with one near base, one at apex, the bristles weaker, 1 naked. Marginal vein very long. Eyes bulging, round, head rounded, maxillary palpi with two subequal points (its insertion not seen). Type, the following species.

Closteromyia mirus, new species.

Green, wings notably marked. A narrow two-thirds com-

plete cross-stripe at base of marginal, a conspicuous, wide one somewhat before middle of marginal, swollen at caudal half, just caudad of middle with a prominent obtuse conical projection nearly to 3; there are two hyaline dots in this stripe, one against marginal, the other against caudal margin; stripe 3 still wider, crescentic, from base stigmal, its basal margin with a triangular projection at middle nearly reaching projection of 2; the concave distal margin sends off an arm to apex at middle; the space between stigmal and postmarginal hyaline; a somewhat faded area at caudal wing margin, center of third stripe. A narrow stripe cross cephalic margin vertex, mouth narrowly, extreme apex and basal half scape, funicles 1 and 4 and necks of 2 and 3, legs save coxæ, trochanters, dorsal and ventral edges of femora, apex of tibiæ, tarsal 2, bases narrowly of femora, ivory. Densely scaly punctate. A wide coppery stripe down each side meson, pronotum, scutum, scutellum, latter curvex; propodeum with a median carina, not long, subglabrous. Hind wing with a narrow cross-stripe from base of long marginal, another, more obscure, at apex of same. Apex fore wing wide, oblately rounded. Club nippleless. Hind wing knife-shaped. Hind tibial spur single. Club cylindrical, equals funicles 3-4 united.

From window, Meringa, November 27, 1918.

Mymaromma, new genus.

Like *Mymar* but tarsi somewhat shorter, 5-jointed, funicle 2 not elongate, blade of fore wing wider and not infuscated. Hind wings absent? Petiole of wing distinctly shorter than blade, which has no secondary marginal cilia. Type, the following species.

Mymaromma goethei, new species.

Dusky brown, wings lightly dusky, abdomen dusky, its long petiole, legs and antennæ save dusky club, pallid. Funicle 1 equal to 3, over twice longer than wide, 2 a bit shorter, equal pedicel, others somewhat longer. Fore wing with five lines of hair-like discal cilia, the middle three long, sinuous, the first soon running into the margin, the fifth soon running into hind

margin opposite basal part of 4, its cilia smaller, 2-4 from apex to a point about where venation would end if present. Fringes deep-set into the margins, 64-66 counting shortest. Petiole appearing as if jointed at distal two-thirds. Strigils absent. Scutum and face lighter. Minute.

Gordonvale, window, February.

Procheiloneurus, new genus.

Like *Cheiloneurus* but scutellum simple, ovipositor extruded, one-fourth of abdomen and the fore wings are distinctly 3-spotted, one ovate marginal spot apex venation, another elongate one opposite, a smaller, round spot at apex centrally at margin. Teeth of mandible acute, 2 somewhat longest. Frons very narrow. Dilation of scape moderate. Type, the following species.

Procheiloneurus triguttatipennis, new species.

1.65 mm. Orange, the fore wings all infuscated but a narrow cross-stripe just proximad of apex of hairless line; scutum save cephalic fourth, scutellum save cephalic margin, hind lateral angle propodeum, abdomen, a spot at meson, upper face pronotum, middle femur at apex, tibia 2 at base widely, purple; upper occiput aeneous. Frons, cheeks save ventrad, ventral margin of scape (less so distad), purplish; rest of antennæ black, save apex of pedicel, funicles 5-6, one corner of apex of funicle 4, ovipositor valves, coxæ, base of femora, all white. Pedicel elongate, funicles 1-2 somewhat longer than wide, 3 quadrate, others shorter and wider. Thorax finely scaly, pubescence inconspicuous.

Gordonvale, July.

Mesentendon, new genus.

Female: Vertex rather thick. Mandibles bidentate. Antennæ 8-jointed, 3 funicle, 1 large ring-joint, the club short, rotund, 2 with a short, stout nipple. Parapsidal furrows complete, distinct; scutellum with a lateral groove joined around apex; propodeum with three narrow median carinæ (the lateral diverging), a spur at hind margin over hind coxa, the

termination of the lateral carina, another farther laterad but smaller, the terminus of another strong carina laterad of the small round spiracle which is central; still another carina along lateral edge; the spiracle thus isolated in an elliptical space enclosed by two carinæ. Petiole a bit longer than wide, scabrous, 2 largest, somewhat over half the surface, rest short. Stigmal short, oblique, postmarginal none. Tibial spurs not enlarged. Pronotum transverse-quadrate. Maxillary palpus with a long cylindrical joint only, this ending in a long seta.

Mesentedon hallami, new species.

Purple, wings clear, veins pale, legs, antennæ red-brown, club black; pedicel vase-shaped, club 1 equal funicle 3, stout, wider than long, other funicles smaller. Polished but pronotum, cephalic scutum and occiput more or less scaly; scutellum laterad of groove, showing coarse longitudinal scaliness, parapsidal furrows finely long striate at apex.

Two females, jungle, Mulgrave River, November.

Diplesiostigma, new genus.

Form of *Epitetrastichus*, stout; resembling *Ormyrus* but abdomen not sculptured coarsely, less convexed. Head a bit wider than long, the antennæ a bit below middle of face, 11-jointed with two extremely short ring-joints, club-solid. Mandibles bidentate; palpi, maxillary 2 long, labial 1 long, joint. Parapsidal furrows distinct, scutellum simple, rimmed at apex, propodeum moderately short, with a pair of well-separated median carinæ and a very long, large, oblique spiracle. Abdomen stout, ovipositor not extruded. Venation as in *Entedonini*, postmarginal twice the short stigmal. Mesepimeron not incised. Monodontomerinæ. Type, the following.

Diplesiostigma particolor, new species.

1.87 mm. Honey, wings clear, legs white, flagellum dusky; occiput widely cross middle, ocellar area, scrobes narrowly and a bow-shaped line down through insertions of antennæ, black. Dorsal body washed with aeneous, scutellum aeneous, so base abdomen narrowly above. Scutum, parapsides with

rather dense whitish pubescence from small punctures, on scutellum less dense and longer, surface of all minutely scaly. Propodeum purple between spiracles. Funicles 1-2 half longer than wide, equal pedicel, 6 wider than long.

Meringa, jungle, November. Two females next day, Mulgrave River.

Xenostryxis, new genus.

Runs in my table to *Habrolepoides* Howard but head somewhat longer than wide, the scrobes practically absent, the face not inflexed; the marginal linear, thick, three and a half times longer than wide, the postmarginal truncate, very short, the stigmal twice it, short, a fourth the marginal. Mandible 2 truncate. Ovipositor extruded half the abdomen which is conic but not compressed. Eyes subrotund, distinctly shorter than the cheeks.

Xenostryxis margiscutellum, new species.

1.50 mm. Slender. Golden, wings subhyaline, following jet: clypeus, lateral margin scutellum, latero-caudal corner propodeum, tegulæ, abdomen at base at lateral margin, a rather wide cinctus on middle tibia, its own width from base, another on hind tibia but a bit wider than the yellow basal of it and the hind tibia above rather far from tips. Finely scaly. Funicles all a bit longer than wide, thicker distad, pedicel a bit longer than any; club dusky, somewhat over half funicle and somewhat wider. Hairless line of fore wing with six or more lines of coarser cilia proximad of it, the main discal cilia very fine and dense. Scutum and scutellum with few soft hairs and setæ. Ovipositor free, inserted near base.

Gordonvale, forest.

Nerotolepsia, new genus.

Like *Erotolepsiella* but stigmal vein but of usual length, the postmarginal shorter than it, hind tibial spurs greatly enlarged, much unequal; there is a tuft of black hairs on fore wing at base of marginal; 2 of abdomen one-fourth surface, 3 and 4 nearly as long; parapsidal furrows incomplete. Pro-

podeum with a carina across meson near middle (at base of the neck) whose lateral ends turn at right-angles and proceed to apex; also a weak median carina. Scutellum simple. Head round, antennæ level with eye ends. Otherwise similar.

Nerotolepsia bella, new species.

Yellow, fore wing with a narrow stripe cross from the tuft and a large mark cross from stigmal and distal one-third marginal; this mark is conically produced beyond stigmal over half way to apex. Abdomen except segment 2 and apex valves of ovipositor, which are silvery, purple, also hind tibia save tip, middle tibia dark. Propodeum neck whitish, longitudinally rugulose. Petiole longitudinally striate. Thorax scaly, scutum with scattered coarse black setæ, scutellum with four main ones of which, the caudo-lateral, is elongate. Middle portion of mesopleurum punctate, dorsum to venter. Pedicel not long, funicle 1 smallest, 3 and 4 longest, a bit longer than wide. Maxillary palpi 3-jointed, 2 longest, all short.

Meringa, jungle, November. Two females next day.

Urogramma, new genus.

Antennæ 8-jointed, 2 funicle, 3 club, shaped as in *Trichogramma*, the funicle compact like the club. Venation normal, characterized by the very short marginal vein which is quadrate from its base to where the stigmal originates but twice longer than wide if measured its whole length, since the short oblique neckless stigmal is given off from the distal half; stigmal not quite as long as wide. both veins thick and uniform. Discal cilia of fore wing in regular lines, marginal cilia short. Abdomen slender conical, longer than thorax, the free ovipositor inserted after middle. Hind wing rather broad, with three lines of discal cilia, the first near costa, 2 and 3 on each side of middle, distad a straggling fourth between 2 and 3. No line of setæ back from stigmal vein. Type, the following.

Urogramma minuta, new species.

1.10 mm. Slender. Black, including tarsi, the wings subhyaline. Pedicel somewhat longer than wide, equal funicle

whose joints are wider than long; club equal pedicel and funicle united, obliquely truncate from base of 3. Finely sculptured. Mandibles tridentate. Frons bristly. Tips tibiæ and knees paler.

Sydney, New South Wales, forest, October 28, 1917.

Epanogmus, new genus.

Like *Pseudanogmus* but abdomen with a more distinct petiole (a very short petiole in named genus), it is still more depressed, shorter, being rounded, distinctly wider than long, segments all large and equal after 2 which, as in other, occupies one-fourth to one-third surface. Antennæ strongly clavate, the segmentation of club not very distinct, 2 ring-joints, the first very short, 13-jointed (club 3-), inserted a bit above ventral ends of eyes, the scrobes forming a deep straight channel to cephalic ocellus. Parapsidal furrows complete, curved, delicate, the scutum twice wider than long (longer in the other). The postmarginal vein is somewhat longer than the stigmal. Propodeum has a very short neck as in the other, no median carina but continuous lateral carinæ which loop from one side to the other across meson near apex; spiracle more minute and a second lateral carina starts just meso-caudad of it and runs straight to caudo-lateral angle (in other there is a tooth toward caudal margin, caudad of spiracle). Clypeus shorter, obtusely incised at meson. Scutellum simple. Marginal thickened at base, one-fourth longer than stigmal. Femur 3 stout. Genotype follows.

Epanogmus breviventris, new species.

Green, wings hyaline but with a sooty cross-stripe from the thickening of the marginal and a blotch from postmarginal, involving the stigmal and fusing proximad with the cross-stripe. Scape, pedicel beneath and legs save coxæ, red. Finely scaly-punctate, abdomen polished nearly. Ring-joint 2 twice wider than long, so distal funicles; funicles 1-2 subquadrate, widening distad.

Jungle along Mulgrave River near Gordonvale, December 2, 1918.

Polynema shakespearei, new species.

Close to *thoreauini* but when compared with type differs as follows: Ovipositor somewhat shorter, the single line of discal cilia which runs to marginal vein is composed of minute, rather pale cilia (in the other distinct and as large as the other cilia; low power); funicle 4 somewhat shorter than 1; petiole black.

Brisbane, H. Hacker.

Anastatus gibboni, new species.

Runs to *racinei* but at once differs in that the narrow hyaline band from marginal is only distinct centrally, a central triangular, hyaline area; funicles 4–6 are soiled yellow like the scape. Otherwise the same.

December 2, 1918, jungle along the Mulgrave near Gordonvale.

Eupelmus brutus, new species.

Like description *Anastatus frederici* but ovipositor a bit over half abdomen, basal and distal one-fifth black, rest white; legs red save pale tarsi (coxæ, femur 1, femur 2 at middle of sides, tibiæ 1 and 3 centrally, metallic). Fore wings yellow at cephalic half under marginal and postmarginal. Funicles 2–4 equal, twice longer than wide, equal pedicel.

Near Ayr (Inkerman), December 9, 1917.

Polynema ara, new species.

Red-brown, antennæ, body of abdomen black, femora 3 infuscated. Scaly, scutellum with punctate cross-suture near apex, propodeum with lateral carinæ only, these converging toward apex and closer to meson than usual. Fore wing with three smoky equidistant cross-stripes, basal longest, half way from venation to 2, margins straight; 2 at distal two-thirds, narrowest, crooked, cephalad of middle abruptly truncated and somewhat swollen, continued across from disto-caudal corner obliquely a short way to center where it obliques to hind margin in the opposite direction—proximo-caudad—and is so widened at the base at middle as to reach over to stripe 3 at its center thus forming a quadrate and a triangular eye spot,

the first cephalic, both rather large; stripe 3 two-thirds the width of 1, crossing so as to cut off the distal edge widely across its middle; 3 is gently sinuous on basal margin but distal margin is regularly scooped out on each side leaving the median part regularly convex; the apex of the wing looks as if it had been torn off; the front and hind margins between stripes 2 and 3 are narrowly fuscous. Fore wing broad, the marginal cilia one-fourth the greatest width, smoky also a little out from base. Funicles five times longer than wide. Club shortest.

One male, forest, July 24, 1918, Gordonvale.

Neanastatus novus, new species.

Like *desertensis* but head uniformly honey, prepectus (save ventro-cephalic margin) concolorous, so hind legs save trochanters and first four tarsal joints—so proximal third middle femur. Only extreme tip middle tibial spur purple.

Jungle, Mulgrave River, November, 1918.

Neanastatus parvus, new species.

Like *cinctiventris* but a half smaller, and the antennæ are rich brown, the mouth yellow, the spot on fore wing faint, quadrate and scarcely passing the stigmal vein. Also, pronotum is yellowish distad. Scutellum all yellow save edges.

One female, Inkerman, December 9, 1917.

Coccophagus signus, new species.

Like the robust purple species. Purple, wings clear, scutellum, postscutellum, scape and legs save first two pairs coxæ, base of first femora, lemon. Mouth orange. Scutellum naked, with four setæ in a rectangle (wider than long).

Meringa, on window, female.

Ooctonus centaurus, new species.

Scutum, scutellum scaly; petiole longitudinally striate, somewhat longer than wide, widening distad, distinct; propodeum glabrous, with two long narrow median carinæ, well but not widely, separated; like *australiensis* but coxæ and first femora

save at apex, black, the fore wing with a mid longitudinal fuscous stripe from apex over half way to venation, the brownish abdomen bears five narrower dusky cross-stripes (apices of the first five segments), hind tibiæ black at distal two-thirds, rest reddish like legs, tarsi yellow. Scape compressed. Funicles 1-5 equal, each over twice longer than wide, others shorter. Club enlarged, distinctly longer than three preceding joints united. Marginal cilia fore wing one-sixth greatest wing width.

One female, Goondi, jungle, September.

Coccophagus perbellus, new species.

Like *albiscutellum* but vertex orange save ocellar area, parapsides orange with a black central spot, legs white save hind coxa. Fore wings distinctly infuscated.

Gordonvale, October.

Stomatocerus hallami, new species.

Black, red as follows: legs apex scape, pedicel, funicles 1-2 (save apex 2), tegulæ. Scutellum distinctly bidentate. Funicle 1 somewhat longer than wide, 2-3 equal pedicel, twice longer than wide, longest. Postmarginal elongate, somewhat exceeding marginal. Fore wings with a cross-stripe from whole of marginal, this accented for first half from thence faintly looped round to costa beyond postmarginal, the middle of this loop narrow; also with apex more or less infuscated. Teeth on hind femur long proximal two-thirds. Abdomen from 4 finely scaly, at first only laterad; 7 subscabrous.

Meringa, jungle, E. Jarvis, October.

Eupelmus hallami, new species.

Runs to *testacciventris*. Abdomen with proximal half venter, same of dorsum save lateral margins and proximal three-fourths of sides, golden. Legs same save coxæ 1 and 3, base of tibiæ 1 narrowly. Proximal half scape silvery (all of ventral edge). Wings yellowish. Ovipositor half of abdomen, white, basal fourth black, apex a bit brownish. Postmarginal

much longer than stigmal. Funicle 4 longest twice longer than wide, 3 equal pedicel, 1 quadrate.

Jungle, Meringa, November. Six females, next day, banks Mulgrave River.

Ceratoneura miltoni, new species.

2.70 mm. Robust. Like the other described species as to sculpture and structure. Black, wings hyaline; face above eyes and vertex, scape, pro- and meso-pleurum (only first sclerite of latter), distal third and lateral margins scutum, scutellum save meson from base more or less, postscutellum and axillæ dark red. Legs yellowish brown save coxæ, hind femora and the middle more or less at base. Propodeum with a median carina and no lateral, scaly. Petiole twice longer than wide, abdomen *somewhat* as in *Eurytoma*, convex, most the segments large, subequal, glabrous. Scutellum with four bristles. Pronotum large. Vertex, finely scaly, rest of thorax more coarsely so. Funicle 1 twice longer than wide, 3 half shorter; club subsolid, no nipple, equals scape; pedicel shorter than funicle 3. Mandible 3 truncate widely.

Forest, Gordonvale, August.

Polycysteloides parviventris, new species.

Differs from genotype in having abdomen *sessile* and mandibles 3- and 4-dentate. Characterized by the short, much wider than long propodeum with a distinct conical neck (punctate, lateral but no median carina, spiracle elliptical, cephalad, its sulcus barely indicated) and the small triangular abdomen whose segments are not much unequal and which is acutely produced beneath at base; abdomen smaller than the convex thorax. Antennæ in middle of face; clypeus striate, a bit produced, the sides of the production oblique, its apex gently concaved. Tooth 3 of 3-dentate mandibles wide and truncate at apex. Parapsidal furrows three-fourths complete. Punctate. Postmarginal two-thirds marginal, stigmal somewhat shorter, long. Legs, antennæ, reddish, coxæ concolorous, femora more or less so, tips tibiæ widely white. Funicle 1 subequal pedicel.

Pentland, lancewood forest, November 23, 1917, one female.

Eusemionella hemiptera, new species.

Slender, 1.20 mm. Purple, the scutellum lemon, axillæ orange, head and scape brown. Coxæ, tarsi, base widely of tibiæ 2 and 3, white. Fore legs paler beneath. Wings much abbreviated, fore attaining bit beyond abdomen's base, 5 times longer than wide, distal fourth or less fuscous, also a bit at base, curved submarginal vein long, marginal also, beginning a bit distad of the fuscous part and extending to apex and a bit around it; discal cilia on the fuscous part only. Hind wings a third smaller, clear. Scutum with dense, short silvery clothing, save cephalad. Sculpture exceedingly fine. Pronotum short. Head somewhat longer than wide, inflexed below by the short scrobes, eyes not convergent, frons moderately wide, lateral ocellus not touching eye by over its own diameter. Pedicel exceeding any funicle joint—1 a bit longer than wide, others gradually shortening and widening or just widening, club wider and about half funicle's length. Three subequal, subacute mandibular teeth. Ovipositor free, the slightly extruded valves white.

Pentland, forest, January, 1918. One female.

Anagyropsis turbulentus, new species.

Ovipositor one-fourth the flat, acute abdomen. Black metallic, wings clear, legs white save coxæ, basal third femur 1, basal fourth femur 2, femur 3 save apex widely, tibiæ 3 save base and apex distinctly; distal three tarsal (at least on hind legs). Tegulæ white save apex widely; scape save dorsad widely, also apex pedicel. Rest of antennæ dull whitish, the funicle and club more or less washed dusky; funicles quadrate, equal pedicel. Dilation of scape not great. Frons moderate to moderately wide. Head densely punctulate. Scrobes narrow, forming a triangle. Cheeks over half eye-length. Scutellum large, triangular, with scutum clothed with fine short dark hairs. Marginal somewhat longer than wide, thick, post-marginal shorter, distinct, stigmal short, equal marginal. Wings wide, discal cilia very fine and dense, coarser proximad of hairless line and in the wide costal cell (3-4 lines). Sculpture of thorax very fine.

A female on leaves of bastard gum, on the case of a psyllid, November, Gordonvale.

Eurytoma hallami, new species.

Like *pyrrhocerus* Crawford but propodeum with a wide oval median *basin* whose margins are ridged, the interior finely rugoso-punctate and inclosing a bifoveate and shallow median channel whose edges and meson are finely carinate; abdomen 3 distinctly longer than 4. Mesopleurum with longitudinal striae which are not dense, its cephalic margin made by a row of punctures between carinae and divided about middle by a similar row but the punctures fewer, the carinae consequently closer together. Marginal distinctly longer than postmarginal. Petiole very short. Propodeum rugoso-punctate. Abdomen finely scaly after 4. Antennae reddish. First femur all black.

Bed of Mulgrave River, Gordonvale, November.

Ablerus diana, new species.

Green, white as follows: Head save for a wide stripe cross at the antennae, over the cheeks and through center of occiput, extreme lateral edge of parapside, pedicel save above save apical half, tip of club, funicles 3 and 4, also knees. Tips of tibiae rather widely (over distal third on middle tibiae) and the tarsi pale yellow. Fore wings with a dense cluster of black hairs under end of marginal vein, the longest marginal cilia half the greatest width. Ovipositor half abdomen's length. Funicles 1, 2 and 4 equal, twice longer than wide, pedicel shorter, funicle 3 quadrate; club equal funicles 1 and 2. Mandible 3 obtuse. Scape moderately widely dilated, widest distad of middle. Sculpture glazed. Fore wing embrowned from base to length of stigmal beyond the latter's apex, the distal margin of this infuscation entire, oblique, the infuscation accented across from marginal vein, so that casually there appear to be two wide cross-stripes, 1 obliqued from submarginal, 2 across just distad of the hair clump; also apex distinctly rather widely dusky, forming a stripe 3 which is convexed at middle of basal margin and not as wide as stripe 2. Discal cilia coarse distad of the hair clump, absent in the hyaline cross-stripe,

more obscure and fine across from marginal vein, absent under submarginal. Hind wing dusky like fore wing, its marginal cilia as long as those of fore wing, its discal faint where present. Fore wing clear between stigmal vein and costal margin.

Little Mulgrave River, jungle, June 7, 1918.

Perilampoides tennysoni, new species.

Like *bicolor* but axillæ barely separated, thorax with no grooves; black purplish with head (save upper half of occiput and ocellar spots) and thorax save metathorax, meso-venter and meso-pleurum, a spot on each side of neck of pronotum and an oval spot on scutellum at meson between middle and apex, yellow brown; also antennæ, tibial tips, tibiæ 1, knees and tarsi. Funicle 6 abruptly enlarged to size of club, shorter than pedicel, others small, 1-5 slightly produced from one side at apex, somewhat wider than long, subequal, the ring-joint cup-shaped and nearly a half shorter. Truncate mandible 2 with its lateral apex acute. Stigmal long, equal marginal, post-marginal a fourth longer.

Two females taken from cavities in green twigs under green disc-galls placed side by side on their rims.

Gordonvale, June 16, 1918.

CORRECTIONS TO VOLUME VII

Page 155, line 31, for "tarsal" read *tarsals*; line 35, for "bend" read *band*.

Page 156, line 1, for "band" read *bands*; line 6, omit "only."

Page 157, line 12, for "penultimate" read *antepenultimate*.

Page 160, lines 8 and 9, for "dark with apical bands" read *with dark apical bands*.

C. S. LUDLOW.

CORRECTION OF PREOCCUPIED NAME

Mr. E. P. VanDuzee kindly calls my attention to the pre-occupation of *Grypotes* Dyar (Ins. Ins. Mens., v, 66, 1917) by *Grypotes* Fieber (Verh. zool.-bot. Ges. Wien, xvi, 503, 1866). The new name *Zatilpa* is accordingly suggested.

HARRISON G. DYAR.

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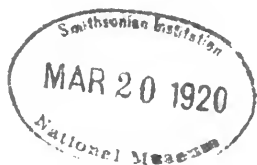
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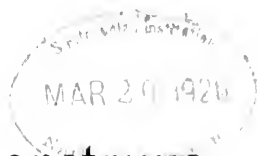
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Insecutor Inscitiae Menstruus

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NOTES ON EUROPEAN MOSQUITOES

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

The mosquito-fauna of continental Europe has not been carefully worked over by modern methods, and many surprises no doubt await us. Ficalbi's work in Italy is remarkably good for its time, but his studies of the male genitalia were not detailed enough.

The following species is closely related to *Aedes pullatus* Coquillett of the Northern Rocky Mountains to Alaska, and I had no suspicion before that there was a representative in Europe.

Aedes metalepticus, new species.

Head and mesonotum with sparse dull golden yellow scales with an olivaceous tint, indistinctly defining two narrow bare dorsal lines. Abdomen black, with rather narrow uniform basal segmental white bands. Legs black, the femora pale beneath; knee-spots white. Wing-scales dark.

Genitalia: Clasp with long terminal spine; side-pieces about four times as long as wide, the tip rounded; apical lobe long, slender, equalling the tip of side-piece, with coarse normal hairs on one side; basal lobe represented by a long, very strong spine and apart from that, two rather short curved spines; not contiguous, but arising from a common chitinated base. Stem of harpago long, angled, the basal portion hirsute; filament angled, and rather broadly widening beyond the angulation. Unci large, with recurved point at tip. Basal appendages with five rather slender spines.

In *pullatus* the two spines of basal lobe are approximate and longer, and the basal appendages are more strongly setose. The two species are very close, however.

Types, 1 male and 12 females, No. 22714, U. S. Nat. Mus.; Alps, Province Sondrio, Italy, as follows: M. Merigio, 1800 m., July 17, 1900; Scais, 1500 m., July 19, 1901; Venina, 1600 m., August 8, 1903; Chiareggio, 1700 m., August 9, 1903; Campo Moro, 2000 m., August, 1903 (M. Bezzi). Also Cusiano, August, 1908 (M. Bezzi), the specimens in poor condition and not positively determined. Five paratypes returned to Prof. Dr. M. Bezzi.

Doctor Bezzi kindly calls my attention to *Aedes jugorum* Vill. (Bull. Soc. Ent. France, 1919, 59, 1919), as possibly identical with this species. Villeneuve's description of the coloration of the mesonotum is not unlike the present form; but he passes over the genitalia with a brief description evidently made with a hand-lens. It is therefore impossible to say whether *metalepticus* is the same as *jugorum* or not. In these insects, the male organs are so characteristic and important for determination that it is surprising to find an eminent author like Doctor Villeneuve disparage them, as he does in the article referred to. "Ce sont des organes trop frêles pour être employés dans une diagnose." Needless to say, our disagreement is profound.

It occurred to me as possible that this might be the same as *Aedes alpinus* Linn., described from Lapland. Linnaeus might easily have included a composite of several species with black tarsi of the *nemorosus* group, so that the name would have to be restricted. In that case *alpinus* would have to be applied to the commonest of the *Aedes* with black tarsi that frequent the mountains of Lapland, whichever that may be found to be. Linnaeus' description, however, is unusually full. His account (Flora Lapponica, 364, 1737) has been kindly put into English for me by Mr. August Busck, and reads as follows. The account in the second edition of the Flora Lapponica is in Latin, and is simply a translation of the Swedish of the first edition: "*Culex alpinus*. Quite like the foregoing [*Culex vulgaris*, a

Simulium], but considerably larger, as large as a grain of wheat; the body is nearly grayish black, with six or eight bands, rising from the under side toward the back. The wings are whitish, with gray veins, shining, and towards the light with a tint of red. Middle of the body (thorax) hairy, especially on the under side; the femora and tibiæ with white rings.

"This mosquito has chosen as its principal place of abode the valleys and clefts in the mountains; but it is not unknown in the forests of Lapland, nor in the upper part of Sweden. Everywhere it appears in less numbers and does not attack in such dense armies of warriors as the foregoing species [*Simulium* sp.], but is individually far more valiant. It does not seek out a pore in the skin, but at once, even before it has gotten firmly settled on the skin, it wounds and stings as if with a needle, preferring the face, and it cannot easily be scared away."

Linnaeus's statement that the thorax is hairy, especially below, strongly indicates that *alpinus* is an earlier name for *nigripes* Zett. *Aedes nigripes* Zett. (Ins. Lapp., 807, 1838) is the predominant arctic species in Scandinavia. It is represented in Greenland by the closely allied *innuitus* D. & K. (Ins. Ins. Mens., v, 166, 1917), and on the arctic shore of the Candian Northwest Territory by *nearcticus* Dyar (Rept. Can. Arctic Exp., iii, Part C, 32, 1919), all of these forms with the same long thoracic vestiture, but differing in details of the male genitalia.

Henriksen & Lundbeck in their "Groenlands Landarthropoder," give a comprehensive bibliography of *Culex nigripes* Zett., treating it as an arctic species from Lapland, Spitzbergen, Greenland, Boothia-Felix, Grinnell Land, etc. The American forms should undoubtedly be separated as indicated above. The synonymy may stand as follows:

AEDES ALPINUS Linn.

Culex pipiens Linnaeus (in part not Linn.), Syst. Nat., ed. x, 602, 1758.

Culex alpinus Linnaeus, Flora Lapp., 2d ed., 381, 1792.

Culex nigripes Zetterstedt, Ins. Lapp., 807, 1838.

Aedes alpinus Dyar & Knab, Proc. Ent. Soc. Wash., xi, 32, 1909.

Aedes alpinus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iii, 368, 1915.

Culex nigripes Henriksen & Lundbeck (in part not Zetterstedt), Meddelelser om Groenland, xxii, 595, 1917.

THE SPECIES OF CHOEROPORPA, A SUBGENUS OF CULEX

(Diptera, Culicidæ)

By HARRISON G. DYAR

Mrs. J. Bonne-Wepster left with me her more difficult slides of *Choeroporpa*, which I have gone over with the following result:

The group seems to be well represented in Surinam, much more abundantly than in Panama, according to the collections which we have received from there. It extends also throughout the Tropics and into the warmer temperate regions both in North and South America.

Culex (*Choeroporpa*) *taeniopus* Dyar & Knab.

Culex taeniopus Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 100, 1907.

Culex taeniopus Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iii, 248, 1915.

Culex taeniopus Dyar, Ins. Ins. Mens., vi, 111, 1918.

This species proves to be widely spread. Described from Nicaragua, found in Panama, and Mrs. Bonne-Wepster has bred it in Surinam and secured a male, showing the species to belong to *Choeroporpa*. Full description of the structures will appear elsewhere.

Culex (*Choeroporpa*) *anips* Dyar.

Culex anips Dyar, Ins. Ins. Mens., iv, 48, 1916.

Culex (*Melanoconion*) *anips* Dyar & Knab, Ins. Ins. Mens., v, 180, 1917.

Culex (*Choeroporpa*) *anips* Dyar, Ins. Ins. Mens., vi, 104, 1918.

The clasp-filament is thickly snout-shaped, with a crest of rather long hairs on top; the tip curves up in a sharp point, the

spine being slender and not appendiculate. The outer division of the lobe of side piece has two slender arms, the outer one of which bears a large leaf; the inner arm has the short filament apical, the long one subapical; middle filament at base of inner arm; no others; a seta on the stem below the outer arm. Second uncal plate furcate, one limb horn-like; no third spine; but on the slender first plate, from which the basal hooks arise, is a stout spine about the middle. Basal lobes very small, irregularly triangular.

From southern California.

Culex (Choeroporpa) erraticus Dyar & Knab.

Melanoconion atratus Dyar (not Theobald), Journ. N. Y. Ent. Soc., xiii, 26, 1905.

Mochlostyrax erraticus Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 223, 1906.

Culex abominator Dyar & Knab, Smiths. Misc. Colls., quart. iss., lii, 257, 1909.

Culex abominator Thibault, Proc. Ent. Soc. Wash., xii, 20, 1910.

Culex abominator Coad, Can. Ent. xlv, 265, 1913.

Culex abominator Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iii, 378, 1915.

Culex erraticus Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iii, 382, 1915.

Culex (Melanoconion) erraticus Dyar & Knab, Ins. Ins. Mens., v., 179, 1917.

Culex (Choeroporpa) erraticus Dyar, Ins. Ins. Mens., vi, 104, 1918.

The clasp-filament is thick, ending in a stout horn, the spine strong and slender; on the outer side before tip is a horn composed of consolidated spines, followed by a hairy area. The outer division of the lobe of the side-piece has two short arms, the outer bearing a very large leaf, with a small accompanying seta; inner arm with the small filament apical, the large one close to it, very stout and expanded by a lateral membrane; middle filament very stout. Inner division of lobe of side-piece with the inner arm reduced, bearing only a slender filament. Second uncal plate small, furcate, one arm horn-like, the other truncate; no third spine. First plate small, without

spine. No basal hooks. Basal appendages small, but with many hairs.

United States, Mississippi Valley region.

Culex (Choeroporpa) peccator Dyar & Knab.

Culex peccator Dyar & Knab, Smith. Misc. Colls., quart. iss., lii, 256, 1909.

Culex incriminator Dyar & Knab, Smith. Misc. Colls., quart. iss., lii, 257, 1909.

Culex peccator Thibault, Proc. Ent. Soc. Wash., xii, 20, 1910.

Culex peccator Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iii, 318, 1915.

Culex incriminator Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iii, 409, 1915.

Culex (Melanoconion) peccator Dyar & Knab, Ins. Ins. Mens., v, 179, 1917.

Culex (Choeroporpa) peccator Dyar, Ins. Ins. Mens., vi, 104, 1918.

The clasp-filament is thick, ending in a stout horn, the spine slender and weak; on the outer side before tip is a separate tuft of setæ, not consolidated into a spine. Outer division of lobe of side-piece with a very large leaf on the outer limb, preceded by a slender filament on a little pedicel of its own; middle filament and the two of the inner limb all approximated, the large one hooked but not expanded. Second uncal plate furcate, one limb horn-like; no third spine. First plate slender, reaching to the lower limb of second plate, with a minute angle near the middle, but no horn. Inner division of lobe of side-piece with the inner arm reduced.

United States, Gulf and South Atlantic regions.

Culex (Choeroporpa) terebor, new species.

Clasp-filament very narrow, the tip snout-like, the spine appendiculate; crest-hairs very short. Outer division of lobe of side-piece with a slender inner arm; a long and a short filament from its tip, the long one hooked; middle filament stout but not very long; outer filaments about three, closely grouped on the side of the lobe. Inner division with the two limbs well separated, the inner one short, but not reduced, each bearing a long curved filament with expanded pointed tip. Second uncal plate shallowly furcate, one limb free, the other extended in a

triangular membrane, which folds across the plate and forms a retrose angle on the side; stem slender, no third projection. First uncal plate triangularly widened, reaching the fork of the second plate and bearing a sharp horn on the outer side about the middle. Basal hooks rather long. Basal appendages moderate, with many hairs.

Type, male, No. 22733, U. S. Nat. Mus.; Surinam, without further data, "two larvæ found in a pool in a stream-bed" (J. Bonne-Wepster), sent under No. BB232, July 20, 1917. The specimen from which the mount of the genitalia was made has been mislaid. Mrs. Bonne-Wepster identified it with *Culex elevator* D. & K. at the time, which it must closely resemble.

Culex (Choeroporpa) ybarmis, new species.

Clasp-filament rather stout, the tip somewhat horn-like, spine appendiculate; dorsal pile short and scant. Outer division of lobe of side-piece slender, curving a little toward apex; a long filament inserted near the base on the inner side; a slender filament subapically, also on the inner side; tip with three short triangularly expanded filaments, forming small leaves. Inner division of lobe slender, columnar, bearing two long filaments with twisted expanded tips, the inner one inserted a little basad of the other but not separated. Second uncal plate furcate, both limbs rather horn-like, broadly emarginate; a sharp double angle near middle of first plate is probably the tip of the fourth plate and not a point on the stem of the first plate. With only the single mount it is difficult to be certain. Basal hooks short, broad, scarcely recurved. Basal appendages large, elliptical, setose, contiguous.

Type, male, No. 22734, U. S. Nat. Mus.; "ground-pool near Paramaribo," Surinam (J. Bonne-Wepster). The adult has the mesonotum entirely dark brown, clothed with small spinose scales. Head with mostly oval flat white scales and many erect forked black ones. Palpi exceeding the proboscis, pointed, black. Abdomen with very narrow segmental white bands, the venter black and white banded. Legs black, without knee-spots, the femora whitish beneath.

The larva has the head broad; antennæ with notch and tuft at the outer third, pale, narrowly blackish at base and on the inner part of the segment beyond the notch. Head-hairs both single, the upper short, the lower long. Air-tube very long and slender, flared a little at the base and expanded at apex, the pecten of long spines reaching nearly one-third the length of the tube. Hair-tufts lost, but six insertions are visible, indicating three pairs, all beyond the middle and approximating the ventral line and dislocated, so as to appear as six tufts in profile. Lateral comb of the eighth segment a patch of rather large sharp spines.

Culex (Choeroporpa) alcocci Bonne-Wepster & Bonne.

Culex (Choeroporpa) alcocci Bonne-Wepster & Bonne, Ins. Ins. Mens., vii, 171, 1919.

Clasp-filament thick, the tip obtuse, scarcely snout-like, more as in *Mochlostyrax*, the spine appendiculate. Outer division of the lobe of the side-piece slender, columnar, a long filament arising about the middle on the inner side; a large expanded leaf on the tip on the inner side, close to three blade-shaped filaments, which arise a little on the outer aspect of the lobe. Inner division of lobe of side-piece rather long, one filament arising at apex and the inner one close to base without separate pedicel. Second plate of unci furcate, deeply emarginate, one limb horn-like, the other with traces of denticulations; a rounded lappet at the base of the fork, but no third spine.

From Surinam.

Culex (Choeroporpa) conspirator Dyar & Knab.

Culex conspirator Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 207, 1906.

Culex conspirator Busck, Smiths. Misc. Colls., quart. iss., lii, 68, 1908.

Culex conspirator Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iii, 410, 1915.

Culex (Choeroporpa) conspirator Dyar, Ins. Ins. Mens., vi, 105, 1918.

Clasp-filament with the tip narrowly snout-like, the spine appendiculate. Outer division of lobe of side-piece with an

oval, pointed delicate ribbed leaf arising from an insertion about the middle of the shaft rather on the inner side; an inner slender arm, which bears a long and a short filament at tip; middle filament between these and the outer group of three flattened and bent filaments, which arise close together. Second uncal plate furcate, one limb horn-like. First plate broadly triangular. Basal hooks long. Basal appendages large, ovate, contiguous, with many setæ. Inner division of lobe of side-piece with two arms, the inner short.

Described from the Mexican type. Panama specimens agree. The second uncal plate has one limb shorter than the other, both pointed.

Culex (Choeroporpa) nicceriensis Bonne-Wepster & Bonne.

Culex (Choeroporpa) nicceriensis Bonne-Wepster & Bonne, Ins. Mens., vii, 174, 1919.

No slide of this is before me.

Culex (Choeroporpa) saramaccensis Bonne-Wepster & Bonne.

Culex (Choeroporpa) saramaccensis Bonne-Wepster & Bonne, Ins. Ins. Mens., vii, 172, 1919.

No slide of this is before me, the cotypes left in the National Museum being both females.

Culex (Choeroporpa) chrysonotum Dyar & Knab.

Culex chrysonotum Dyar & Knab, Proc. U. S. Nat. Mus., xxxv, 57, 1908.

Culex chrysonotum, Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iii, 310, 1915.

Culex (Choeroporpa) chrysonotum Dyar, Ins. Ins. Mens., vi, 105, 1918.

Outer portion of clasp-filament rather narrowly snout-like, normal, the spine appendiculate. Outer division of lobe of side-piece slenderly columnar, with a slender inner limb, bearing a long and a short filament at tip, the long one somewhat widened and blade-like; middle filament contiguous to the three on the outer aspect, all curved and somewhat broadened and blade-like; occasionally the outer one appears ribbon-like.

Inner division of lobe of side-piece with a long outer and short inner arm, each bearing a long filament with expanded pointed tip. Second uncal plate furcate rather shallowly, one limb horn-like, the other rounded; a curved horn well below the middle of the stem. Basal hooks recurved, much broadened, thin above. Basal appendages rather large, rounded, oblique, setose, distinctly separated.

Described from the Panama type. A specimen from Surinam agrees, showing that this species is more widespread than usual in the subgenus. It is possible that *chrysothorax* Peryassú (1908) and *chrysothorax* Newstead and Thomas (1910) are the same. These were described from Brazil and Peru, but are not known to me in nature.

Culex (Choeroporpa) elevator Dyar & Knab.

Culex elevator Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 217, 1906.

Culex elevator Howard, Dyar & Knab (in part), Mosq. No. & Cent. Am. & W. I., iii, 414, 1915.

Culex apateticus Howard, Dyar & Knab (in part), Mosq. No. & Cent. Am. & W. I., iii, 321, 1915.

Culex (Choeroporpa) elevator Dyar, Ins. Ins. Mens., vi, 106, 1918.

Clasp-filament narrowly snout-shaped, the spine appendiculate. Outer division of the lobe of the side-piece with a slender inner limb, bearing at its tip a long and a short filament, both flattened and blade-like; middle filament close to the three on outer aspect of lobe, all flattened and blade-like. Inner division of the lobe of side-piece with the two arms well separated, the outer long, the inner very short, each bearing a long filament with flattened and pointed tip. Second plate of the unci furcate, the stem short and rather thick, without third spine; inner limb elliptical, erect; outer limb at right angles, flattened, appearing spine-like in side view. Tip of first plate on a level with the outer limb of second; a sharp angle at the middle just above the excavation where the broad articulated plate is inserted. Basal hooks long, well curled. Basal appendages small, fan-shaped, contiguous, tubercular, each with about 10 setæ. The pecten on the harpes is fine and delicate.

Costa Rica and Panama, not received from other localities.

Culex (Choeroporpa) phlogistus, new species.

Clasp-filament rather thickly snout-shaped; dorsal pile short but abundant. Outer division of lobe of side-piece short, a little produced on the inner corner, bearing there two blade-shaped filaments, one of which (the outer) is only a little shorter than the other which is hooked at tip; middle filament strongly blade-shaped and long, closely followed by three broadened curved filaments on the outer aspect of the apex. Inner division of lobe of side piece with the arms separated, the outer rather short, the inner very short, each with a long curved filament with expanded tip, pointed on one side. Second plate of the unci furcate, one limb finely pilose, denticulate throughout on its inner surface, the other smooth; a long sharp spine arising at the base of the stem. First plate emarginate on the side for the insertion of the articulated plate, which is very distinct, large and broadly rounded, showing a point near the middle of its margin. Basal hooks fairly long and recurved, but somewhat broadened and gently curved, not sharply hooked at the end. Basal appendages large, elliptical, oblique, contiguous, each bearing very many setæ. Comb-teeth of the harpes fine and delicate.

The adult presents no distinguishing characters; bronzy brown mesonotum, elliptical flat white scales on the head; abdomen wholly black; legs without knee-spots; wing-scales narrowly ovate, becoming ligulate on the base of the third vein and on the fifth vein. Palpi of male longer than the proboscis, pointed.

Type, male, No. 22135, U. S. Nat. Mus.; "larvæ found in pools in the woods, May, 1919, interior of colony," Surinam (J. Bonne-Wepster).

Larva. Head large, broad, darkly infuscated; antennæ long, with a notch at the outer third, bearing a large tuft; infuscated, except the middle of the basal segment, which is whitish. Mental plate with a central tooth, four small ones and two larger ones on each side. Head hairs, upper small, in two or three, lower long, single. Air-tube slender, straight, some eight times as long as wide, pale, with a dark band at the

middle; pecten reaching one-third, of long spines, followed by six tufts along the posterior margin, being three pairs dislocated and pushed back; the upper two tufts are approximate, scarcely dislocated. Tracheæ slender, winding around in the tube. Lateral comb of the eighth segment of many spines in a patch, the posterior row larger. Skin pilose on front of thorax and end of anal segment, elsewhere smooth.

Culex (Choeroporpa) albinensis Bonne-Wepster & Bonne.

Culex (Choeroporpa) albinensis Bonne-Wepster & Bonne, Ins. Ins. Mens., vii, 173, 1919.

Clasp-filament slenderly snout-shaped, the spine long and slender, scarcely widened. Outer division of lobe of side-piece with a slender inner arm, from which arises a long and a short filament, the long one flattened and hooked at the tip, the short one blade-like; middle filament broadly blade-shaped, long; three filaments on the outer aspect of apex contiguous, curved, a little flattened. Inner division of lobe of side-piece with the outer arm short, the inner very short, not widely separated, each bearing a large filament with expanded pointed tip. Second uncal plate with the tip widely expanded, membranous, sharply serrate all along the edge, with a point at either end; a long spine below the middle of the stem. Articulated plate small, triangular, darkly chitinized. Basal hooks small, broad, not recurved. Basal appendages large, ovate, nearly twice as long as broad, with many rather long setæ.

From Surinam.

Culex (Choeroporpa) maroniensis Bonne-Wepster & Bonne.

Culex (Choeroporpa) maroniensis Bonne-Wepster & Bonne, Ins. Ins. Mens., vii, 175, 1919.

No slide of this is before me.

Culex (Choeroporpa) tecmarsis Dyar.

Culex (Choeroporpa) tecmarsis Dyar, Ins. Ins. Mens., vi, 124, 1918.

Clasp-filament slenderly snout-shaped, the spine widened and appendiculate. Outer division of the lobe of side-piece rather

small and tapering; at the summit a large and a small filament, the former hooked; middle filament long, close to the three outer filaments, all arranged on the oblique outer side of the stem. Inner division of lobe of side-piece with the arms well separated, the outer moderate, the inner short, each bearing a stout curved filament, the outer widened and pointed, the inner spatulate at tip. Second uncal plate furcate, shallowly emarginate, the inner limb pointed, the outer rounded, both short; a strong spine about the middle of the inner side of the stout stem. Articulated plate of unci large, infuscated, concave, with an emargination on one side of the apex. Basal hooks large and stout, long, bent sharply at outer third, the tips recurved. Basal appendages long and slender, the tips a little enlarged and bearing many stout setæ.

So far, received only from Panama.

Culex (Choeroporpa) phlabistus, new species.

Clasp-filament moderately snout-shaped, with dorsal crest of fine pile, spine appendiculate, little widened. Outer division of lobe of side-piece with rather long slender stem, with slender curved outer arm, bearing a small leaf, a widened rounded filament and a blade-like pointed filament; inner angle with a long filament with hooked tip and a widened ligulate round-tipped one, middle filament from a very strong insertion, but moderate only, blade-shaped. Inner division of lobe of side-piece with the arms separated, that is diverging at an angle, but the inner sessile on the outer, which is stout and moderate only, each with a large filament with widened hooked tip. Second uncal plate furcate, one limb sharp, the other denticulated at tip; stem long and slender, a stout hook near the base. First plate triangular-spatulate. Articulated plate large, infuscated, deeply emarginate at apex. Basal hooks long, curled. Basal lobes rather small, triangular and tubercular, with many fine setæ.

Adult with mesonotal scales small and hair-like, bronzy brown; head with a rather large area of narrow scales on vertex, flat white ones on the sides. Abdomen with basal seg-

mental white bands, widening on the sides. Legs dark, without knee spots. Wing scales rather broadly ovate, spinose along the costa.

Type, male, No. 22736, U. S. Nat. Mus.; "pupa in ground-pool, interior of colony, May, 1919," Surinam (J. Bonne-Wepster).

Culex (Choeroporpa) coppenamensis Bonne-Wepster & Bonne.

Culex (Choeroporpa) coppenamensis Bonne-Wepster & Bonne, Ins. Ins. Mens., vii, 173, 1919.

Clasp-filament moderately snout-shaped, the upper edge thickened and clear, with minute denticles toward tip, no pile; spine triangularly widened, appendiculate. Outer division of lobe of side-piece with a long slender outer arm, bearing a large expanded leaf; inner angle less than half as long as this arm, quadrate, bearing a long filament with hooked tip, a short one and a (middle filament) blade-like one; angle between the two divisions of the lobe spinous. Inner division stout, the arms not separated, the inner basad of the outer, each bearing a stout filament with expanded pointed tip. Second uncal plate short and wide, furcate, the pointed limb short, the rounded (outer) one longer; a curved horn adjacent to these, the three making a triangle. First plate trigonate, with pointed tip. Articulated plate large, expanded, infuscated, not emarginate, the margin being convex, fimbriated toward one angle. Basal hooks long, curved, spatulate at the ends. Basal appendages rather small, ovate, oblique, contiguous, setose.

From Surinam.

Culex (Choeroporpa) invocator Pazos.

Culex invocator Pazos, Anal. Acad. Cien. méd. fís. y nat. de la Habana, xix, 426, 1908.

Culex invocator Dyar & Knab, Smiths. Misc. Colls., quart. iss., lii, 258, 1909.

Culex invocator Pazos, San. y Ben., ii, 50, 1909.

Culex invocator Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iii, 323, 1915.

Culex (Choeroporpa) invocator Dyar, Ins. Ins. Mens., vi, 105, 1918.

Clasp-filament narrowly snout-shaped, with a stout seta; spine widened and appendiculate. Outer division of lobe of side-piece with a short outer arm, bearing a large expanded leaf; inner angle with a broad blade-like filament with hooked tip, a small filament and a (middle) narrowly blade-like one. Inner division with the arms separated, inner one short, each bearing a stout filament with expanded hooked tip. Second uncal plate short and broad, furcate, the limbs short, pointed and equal, a stout hook near them, the three forming a triangle. First plate triangularly spatulate. Articulated plate large, rounded, infuscated, one angle produced inward and roughened. Basal hooks long, curved, sharply pointed. Basal appendages large, elliptical, oblique, approximate, with many long setæ.

This Cuban species is allied to *coppenamensis* B.-W. & B. of the South American mainland.

Culex (Choeroporpa) corentynensis, new species.

Clasp-filament thickly snout-shaped, the spine appendiculate, not much widened. Outer division of the lobe of the side-piece with a slender inner arm, bearing a large filament with hooked tip and a small filament; from the base of the stem toward the inner side a triangularly widened ribbed leaf, apparently representing the middle filament, but placed basad of its usual position; outer angle with three approximate curved filaments. Inner division with the limbs separate, equal, both short and bearing stout filaments with widened pointed tips. Second uncal plate furcate, one limb smooth and slender, the other (inner) coarsely denticulate; a stout horn near the tip, the three forming a triangle. First plate trigonate with pointed tip; a horn at the insertion of articulated plate. Articulated plate large, rounded triangular, fimbriate on one angle. Basal hooks rudimentary. Basal appendages elliptical, small, rather remote, with few hairs.

The adult has small oval white scales on the sides of head, small bronzy brown scales on mesonotum, abdomen entirely black, legs without knee-spots. Wing-scales narrowly ovate, becoming ligulate on base of third and fifth vein.

Type, No. 22737, U. S. Nat. Mus., two males; Surinam, "pupæ found in ground pools, January 12, 1919" (J. Bonne-Wepster).

Dr. and Mrs. Bonne attached the name *corentynensis* to the specimens, but did not include this among their described species.

Culex (Choeroporpa) mutator Dyar & Knab.

Culex mutator Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 207, 1906.

Culex mutator Dyar, Proc. Ent. Soc. Wash., viii, 17, 1906.

Culex mutator Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, plate 108, fig. 361, 1912.

Culex mutator Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iii, 422, 1915.

Culex (Choeroporpa) mutator Dyar, Ins. Ins. Mens., vi, 105, 1918.

Clasp-filament narrowly snout-shaped, the spine widened and appendiculate; pile short and scanty, anteriorly situated. Outer division of the lobe of the side-piece columnar, widened at tip, with a short inner arm, bearing a long filament with hooked tip, and a short blade-like one, arising from the base of the arm; middle filament developed into a large, broadly expanded leaf, as long as any of the filaments; three filaments on the outer aspect of apex of lobe, small and blade-like. Inner division of lobe of side-piece with the arms well separated, outer long and curved, inner rather long, each bearing a long curved filament with expanded pointed tip. Second uncal plate bifid, both limbs pointed; a curved horn from the stem near the tip, the three forming a triangle. Articulated plate large, oval, rounded on the margin. Basal hooks long and recurved, but broadened and with spatulate tips. Basal appendages large, elliptical, oblique, contiguous, with many short setæ. The teeth of the harpes seem to be delicate, but strong toward apex. This may be due to the position of the parts in the single mount.

From Cordoba, Mexico.

Culex (Choeroporpa) leprincei Dyar & Knab.

Culex leprincei Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 202, 1907.

- Culex leprincei* Busck, Smith. Misc. Colls., quart. iss., lii, 67, 1908.
Culex trachycampa Dyar & Knab, Can. Ent., xli, 101, 1909.
Culex leprincei Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, plate 106, fig. 353, 1912.
Culex trachycampa Howard, Dyar & Knab, l. c., ii, plate 108, fig. 363, 1912.
Culex leprincei Howard, Dyar & Knab, l. c., iii, 397, 1915.
Culex trachycampa Howard, Dyar & Knab, l. c., iii, 329, 1915.
Culex (Choeroporpa) leprincei Dyar, Ins. Ins. Mens., vi, 105, 1918.

The genitalia are almost exactly like those of *mutator*. The teeth of the harpes are stout and strong, from 7 to 10 in number. The setæ on the basal appendages are distinctly longer, being rather long as opposed to short. The basal hooks are regularly recurved, not much widened and with pointed tips. The differences, however, are so inconsiderable that I would be inclined to overlook them, except that the larvæ differ rather conspicuously, as can be seen from comparison of the figures quoted. The difference in the head-hairs cannot be unimportant.

The species is rather common in Panama.

***Culex (Choeroporpa) peribleptus* Dyar & Knab.**

- Culex (Mochlostyrax) peribleptus* Dyar & Knab, Ins. Ins. Mens., v, 181, 1917.
Culex (Mochlostyrax) peribleptus Dyar, Ins. Ins. Mens., vi, 108, 1918.
Culex (Choeroporpa) peribleptus Dyar, Ins. Ins. Mens., vii, 161, 1919.

Clasp-filament narrowly snout-shaped, a crest of very short pile running to tip; spine widened and appendiculate. Outer division of the lobe of the side-piece slenderly columnar, widened at tip; a short inner arm bearing a long filament with hooked tip and a small delicate one; middle filament broadly blade-shaped, long; on the outer aspect of the tip, a large broadly expanded leaf and two blade-like filaments, not as long as the leaf. Inner division of lobe of side-piece with the arms well separated, the outer long, the inner short, each bearing a long stout filament with curled hooked tip. Second plate of unci furcate, each limb pointed; a curved horn arising

some distance below the apex. Articulated plate triangularly widened, the outer margin entire. Basal hooks long and recurved, somewhat broadened, but with pointed tips. Basal appendages large, obliquely quadrate, setose, the setæ toward the produced outer angle longer.

Southeastern United States.

Culex (Choeroporpa) moorei Dyar.

Culex (Mochlostyrax) moorei Dyar, Ins. Ins. Mens., vi, 108, 1918.

Clasp-filament with the outer part broadly elliptical, the tip drawn out into a horn on which the narrow appendiculate spine lies; a dorsal crest of very short pile. Outer division of lobe of side-piece rather shortly columnar, without arm, a large broadly expanded leaf on the inner angle, accompanied by a small filament; middle filament also forming a leaf, more delicate than, but almost as large as the inner one; three filaments on the outer aspect of the lobe toward tip. Inner division of lobe of side-piece with the arms well separated, the outer rather long, the inner nearly half as long as it, each bearing a stout filament with expanded hooked tip. Second uncal plate stout, furcate, one limb (inner) pointed, the other more rounded; a stout curved horn from about the middle of the stem. Articulated plate expanded trigonate, infuscated, the margin smooth. Basal hooks moderately long, stout and widened, but recurved and with pointed tips. Basal appendages large, produced, being three times as long as wide, indicating the development of *tecmaris*, though by no means so extreme, with many setæ, those toward the tip longer.

From British Guiana. I described this in *Mochlostyrax* on account of the shape of the clasp-filament; but the uncal plates are not formed as in that subgenus, being quite characteristic of *Choeroporpa*. I therefore transfer the position. The larva is not at hand to confirm or disprove the reference.

Culex (Choeroporpa) bastagarius Dyar & Knab.

Culex bastagarius Dyar & Knab, Proc. Biol. Soc. Wash., xix, 170, 1906.

Culex bastagarius Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iii, 424, 1915.

Culex (Choeroporpa) bastagarius Dyar, Ins. Ins. Mens., vi, 105, 1918.

Clasp-filament rather narrowly snout-shaped, the spine widened and appendiculate. Outer division of lobe of side-piece short, with a short stout inner arm, bearing a long filament with hooked tip and a small filament; middle filament broadly blade-like; two outer filaments and a small oval leaf, the leaf having a very large insertion, although small. Inner division of lobe single, forming a broad common pedicel, one filament inserted basally of the other, long, strong, with widened pointed tips. Second uncal plate widely furcate, both limbs short and pointed; a stout horn with them, making a three-pointed tip. First plate with a horn-like projection at insertion of articulated plate. Articulated plate triangularly widened, broadly emarginate at tip. Basal hooks very short, stout, curved, with bluntly pointed tips. Basal appendages moderate, elliptical, approximate, setose, with rather long hairs.

From Trinidad.

***Culex (Choeroporpa) vapulans*, new species.**

Genitalic characters indistinguishable from *bastagarius*, except that the basal hooks are rather long, recurving to the middle of stem of second plate, with strongly hooked tips.

The adult does not differ from the description of *bastagarius*.

Types, two males, No. 22738, U. S. Nat. Mus.; "larvæ in a pool near Paramaribo," Surinam (J. Bonne-Wepster).

***Culex (Choeroporpa) carcinophilus* Dyar & Knab.**

Culex carcinophilus Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 207, 1906.

Culex carcinophilus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., ii, plate 12, fig. 85, plate 109, fig. 368, 1912; iii, 412, 1915.

Culex (Choeroporpa) carcinophilus Dyar, Ins. Ins. Mens., vi, 105, 1918.

Clasp-filament rather narrowly snout-shaped, roundedly prominent dorsally, the pile more distinct on the prominence; spine very small, appendiculate. Outer division of the lobe of the side-piece oblique outwardly, the inner angle continued as

a short arm, bearing a long filament with hooked tip and a small filament; middle filament distinct, blade-shaped, approximated to the outer group of filaments, which consist of a small filament, a broad one with spatulately expanded tip, and a rather small leaf, the latter elliptical, pointed, and arising from a very large insertion. Inner division of the lobe of side-piece with both arms short, the inner shorter, well separated, each with a long curved filament with enlarged pointed tip. Second uncal plate furcate, both limbs pointed, a stout horn near the tip. Articulated plate broadly expanded, the outer margin rounded, with a point on one corner. Basal hooks long, recurved, pointed at tip. Basal appendages large, elliptical, oblique, with many small setæ.

From Santo Domingo.

Culex (Choeroporpa) comminutor, new species.

Clasp-filament rather narrowly snout-shaped, the spine appendiculate. Outer division of lobe of side-piece slenderly columnar, with a short inner arm, bearing a long filament with hooked tip and a short blade-shaped one; middle filament blade-shaped, and a little basad of its insertion is a triangularly expanded leaf, not as long as the filaments; two blade-like filaments and one round-tipped one on the outer aspect of the lobe. Inner division of lobe of side-piece with the arms well separated, the outer rather long, the inner short, each bearing a stout filament with widened pointed tip. Second uncal plate with long slender stem, the tip furcate, inner arm horn-like, outer with bluntly triangular point; below the middle of the stem, a very large horn-like spine. Articulated plate small, triangularly widened. Basal hooks long, recurved, but rather stout, the points in the mount, only reaching back to the origin. Basal appendages of good size, but triangularly expanded and tubercular as if in process of reduction; setæ numerous, small.

Adult with mesonotum bronzy brown scaled, the abdomen with white basal segmental bands. Wing-scales rather broadly ovate. Legs bronzy black.

Type, male, No. 22739, U. S. Nat. Mus.; "larvæ in pool,

interior of the colony, May, 1919," Surinam (J. Bonne-Wepster).

Culex (Choeroporpa) eastor, new species.

Clasp-filament broadly snout-like, the spine widened and appendiculate. Outer division of lobe of side-piece columnar, long, with a blunt tip without arms; on the inner angle a long filament with hooked tip and a short filament; middle filament blade-like; on the outer angle and a little down the side, a short leaf with fluted edge, and two small setæ. Inner division of lobe of side-piece conical, without arms, one filament at the tip and one on the side, each with flattened pointed tip. Second uncal plate with furcation laterally directed, the horn on a level with the lower fork. First plate with a spine at the insertion of the articulated plate, the latter broadly expanded. Basal lobes contiguous, moderate, broadly elliptical, oblique, tubercular, with short setæ.

Adult with mesonotum bronzy brown, abdomen entirely bronzy black. Palpi exceeding proboscis, pointed. Legs black, femora pale below. Wing-scales broadly ligulate, rather squarely ended. Head with white scales on the sides.

Type, male, No. 22740, U. S. Nat. Mus.; "pupa in swamp, coastal region, February, 1917," Surinam (J. Bonne-Wepster).

Culex (Choeroporpa) maxinocca, new species.

Clasp-filament rather thickly snout-shaped, the spine slender, appendiculate. Outer division of lobe of side-piece columnar, with a rather long inner arm, bearing a long filament with hooked tip and a shorter blade-shaped one; middle filament long, blade-shaped, arising near the middle of the inner arm, a minute seta inserted just basad of it; outer group of four blade-shaped curved filaments from a notch at outer angle of the lobe. Inner division of the lobe of side-piece with the arms well separated, the outer long, the inner short, each with a long stout filament with widened pointed tip. Second plate of the unci furcate, one arm horn-like, the other rounded; a stout horn-like spine arising near the base of the stem. Articulated plate large, infuscated, roundedly widened, with an exca-

vation on the margin. Basal hooks long and well curled, but membranously broadened, though with short tip. Basal appendages moderate, oblique, rather well separated, with many fine short setæ. Harpes with about seven teeth.

The adult has the head and mesonotum with dark bronzy brown scales, palpi longer than the proboscis, pointed, black; abdomen with narrow basal segmental white abdominal bands; wing-scales rather broadly ligulate with rounded ends; legs bronzy black, the femora paler beneath.

Types, four males, No. 22741, U. S. Nat. Mus.; "larvæ in ground pool in the interior of the colony, May, 1919," Surinam (J. Bonne-Wepster).

Larva. Head broadly rounded, antennæ long, the latter entirely dark; head lightly infuscated, darkly at top of clypeus and behind eyes. Head hairs, upper in fours, rather long, lower single, long. Air-tube long, flared at base and a little at tip, about eight times the basal width; pecten of short teeth, reaching one-third, the apical ones distantly spaced; hair-tufts very small and slight, three tufts, approximated to the posterior margin of the tube, the two basal ones well dislocated, the apical pair approximate, each with four or five short hairs. Latèral comb of the eighth segment of many small equal spines in a patch, three rows deep, the single spines with widened, fringed tips. Skin minutely spicular, the spicules longer at the extremities, but not forming pile.

Culex (Choeroporpa) tosimus, new species.

Clasp-filament broadly snout-shaped, the spine widened and appendiculate. Divisions of the lobe of the side-piece as in *maxinocca* described above. Second uncal plate also as in *maxinocca*, the articulated plate with rather narrow stem, then roundedly expanded at apex. Basal hooks very short, curved, but not to reach their own origin, the point sharp. The harpes have fine delicate pecten, about ten teeth, the apical tooth strong.

The adult is without head; the mesonotum, abdomen and wing-scales as in *maxinocca*.

Type, male, No. 22742, U. S. Nat. Mus.; "larvæ in pool in the woods, interior of the colony, December 18, 1918," Surinam (J. Bonne-Wepster).

The larva is as in *maxinocca*, although as the head hairs and antennæ are lost, it is possible that they show differences.

Culex (Choeroporpa) vaxus, new species.

Clasp-filament narrowly snout-shaped, the spine appendiculate. Outer division of the lobe of the side-piece columnar, with a slender inner arm, bearing a long filament with hooked tip and a short blade-shaped filament; middle filament blade-shaped, arising near the outer group of filaments; a slender spatulately expanded filament inserted close to it and a little basad. Outer filaments curved, blade-shaped. Inner division of lobe of side-piece with the arms well separated, the outer long, the inner short, each with a long strong filament with expanded pointed tip. Second uncal plate furcate, the inner limb denticulate, the outer one smooth; a large very stout curved horn arising about the middle of the stem. Articulated plate large, expanded, with excavate margin, infuscated. Basal hooks long, slender, strongly recurved, and with pointed tips. Basal appendages moderate, slightly separated, oblique, elliptical, with small setæ.

The adult has the head with many white scales, mesonotum bronzy brown, abdomen black with rather broad basal segmental white bands. Legs black, the knees pale. Wing-scales rather narrowly ovate.

Types, three males, No. 22743, U. S. Nat. Mus.; (type) "larva in a ditch, interior of colony, January 18, 1919," Surinam (J. Bonne-Wepster); "pupa found in a swamp, Lawa River, March 5, 1917," Surinam (J. Bonne-Wepster).

The larva has the head broad, lightly infuscated; antennæ large, with notch and tuft at outer third, infuscated at base and on both sides of the tuft; both head-hairs single. Skin spicular on thorax and end of anal segment. Lateral comb of the eighth segment of small spines in four rows, the posterior ones only slightly larger, some 30 spines in the patch.

Air-tube straight, slender, not flared at base, some ten times as long as wide; pecten reaching one-third, the teeth moderate, the outer ones somewhat longer; five pairs of rather small hair-tufts along the posterior margin, approximate, slightly dislocated. Tracheæ narrow and curving about in the tube.

Closely allied in both genitalia and larva to *educator* Dyar & Knab from Central America. It may be only a geographical form of *educator*.

Culex (Choeroporpa) educator Dyar & Knab.

Culex educator Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 217, 1906.

Culex elevator Howard, Dyar & Knab (in part), Mosq. N. & Cent. Am. & W. I., iii, 414, 1915.

Culex apateticus Howard, Dyar & Knab (in part), Mosq. No. & Cent. Am. & W. I., iii, 321, 1915.

Culex (Choeroporpa) educator Dyar, Ins. Ins. Mens., vi, 105, 1918.

The genitalia are as just described for *vaxus*, with the single exception of the absence of the expanded filament adjacent to the middle filament of the outer division of lobe of side-piece. If present at all, it is minute and setiform.

Described from Costa Rica, and apparently the commonest *Choeroporpa* in Panama.

Culex (Choeroporpa) bibulus, new species.

Clasp-filament thick, but narrowly snout-shaped, the spine appendiculate. Outer division of the lobe of the side-piece columnar, with a short inner arm, bearing a long hooked filament and a short one; middle filament blade-shaped, accompanied by a slender round-tipped filament; outer group of three filaments curved and blade-shaped. Inner division of the lobe of side-piece with the arms well separated, the outer long, the inner very short, each with a long filament with expanded pointed tip. Second uncus plate furcate, the inner limb denticulate, the outer smooth; a very large curved horn, arising from the stem just at the base of the furcation. Articulated plate triangularly expanded, excavated at outer margin. Basal hooks long, strongly recurved, pointed. Basal ap-

pendages rather small, elliptical, oblique, shortly setose, rather narrowly separated.

The adult has some white scales on the sides of the head, mesonotum with bright bronzy brown scales, abdomen with white basal segmental bands. Legs dark brown, the knees pale. Wing-scales ovate, but not very broadly so. Male palpi longer than the proboscis, pointed.

Type, male, No. 22744, U. S. Nat. Mus.; "larvæ in ground-pool, interior of colony, January 24, 1919," Surinam (J. Bonne-Wepster).

Larva. Head wider than long, rounded; head hairs, the upper in twos, delicate, the lower long and single. Skin spicular-pilose, showing strongly on thorax and on sixth to ninth segments. Lateral comb of the eighth segment of rather few large pointed-tipped scales in a triangular patch, the patch about three rows deep and the scales all alike in size. Anal segment spicular-pilose on posterior margin. Air-tube straight, rather short, tapered a little gradually outwardly, about six times the basal width; pecten reaching over one-third, but of few teeth, the outer ones gradually longer; five pairs of posterior hair-tufts, approximated along the posterior margin, but not dislocated, distinctly long, decreasing in length outwardly.

Culex (Choeroporpa) iolambdis Dyar.

Culex (Choeroporpa) iolambdis Dyar, Ins. Ins. Mens., vi, 106, 1918.

Clasp-filament narrowly snout-shaped. Outer division of lobe of side-piece rather shortly columnar, with a slender inner arm bearing a long filament with hooked tip and a short blade-shaped one; middle filament blade-shaped, a small seta inserted below it; outer group of three filaments curved and blade-shaped. Inner division of lobe with the arms not separated, the outer longer than the inner, each with the usual filament. Second uncal plate furcate, the inner limb denticulate, the outer smooth; a small horn on the stem just at the fork. Articulated plate expanded, straight on the margin, infuscated. Basal hooks rather long, recurved, somewhat flattened, but with

sharp tips. Basal appendages small, separate, trigonate, with about 15 short setæ arising from conspicuous tubercles.

From Panama. I still have only the unique type.

Culex (Choeroporpa) inhibitor Dyar & Knab.

Culex inhibitor Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 207, 1906.

Culex inhibitor Dyar, Proc. Ent. Soc. Wash., viii, 17, 1906.

Culex inhibitor Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iii, 391, 1915.

Culex (Choeroporpa) inhibitor Dyar, Ins. Ins. Mens., vi, 105, 1918.

Clasp-filament mediumly broad, snout-shaped, the spine widened and appendiculate. Outer division of the lobe of side-piece columnar, rather short, the inner angle scarcely produced, bearing a long hooked filament and a shorter blade-shaped one; middle filament broadly blade-shaped, large; of the outer group of filaments, one has a very large insertion as if to support a leaf, but I cannot see that such a structure is present, the filament arising from this insertion seems stout, but about the length of the other outer ones. Inner division of lobe of side-piece with the arms separated, the outer not over twice as long as the inner, which is a little longer than broad. Second uncal plate badly distorted in the mount, apparently furcate, one limb pointed, the other smooth, with a small horn at the fork. Basal hooks long, recurved, flattened, but with pointed tips. Basal appendages rather large, oblique, elliptical, with rather long fine setæ, about 30 in number.

From Santo Domingo.

Culex (Choeroporpa) jonistes, new species.

Clasp-filament very broadly snout-shaped, the spine appendiculate. Outer division of the lobe of side-piece columnar, the inner filament arising near the base and lying along the column, hooked at tip; short accompanying filament inserted toward apex of column, blade-like; middle filament inserted near the tip of the column, the three outer ones on the summit, which curves outward a little. Inner division of lobe of side-piece single, the inner filament inserted a little basally of the

outer, each with stout filament with expanded pointed tip. Second uncal plate furcate, the inner limb horn-like, the outer slender, smooth, laterally directed; a slender curved horn arising from the base of the inner limb. Articulated plate large, trigonate, deeply emarginate outwardly. Plates at bases of side-pieces also present, distinct, moderate, infuscated. Basal appendages moderate, contiguous, oblique, with rather long fine setæ.

The adult has some white scales on the sides of the head, mesonotum with bright bronzy brown scales, abdomen with basal segmental white bands, narrow at the base, broader outwardly. Legs brown, knees narrowly pale. Wing-scales on the forks of the second vein moderately ovate.

Type, male, No. 22745, U. S. Nat. Mus.; "larvæ in a ditch, interior of the colony, January, 1919," Surinam (J. Bonne-Wepster).

Culex (Choeroporpa) idottus, new species.

Clasp-filament narrowly snout-shaped, the spine appendiculate. Outer division of lobe of side-piece short; a short inner arm, bearing a long filament with hooked tip and a shorter blade-shaped one; middle filament and the outer group of three, approximate, almost sessile on the short column, the lower outer one large and quadrately hooked, the articulation subpedicellate and a little on one side. Inner division of lobe of side-piece with the arms not separated, the inner about half as long as the outer, each with a long crooked filament with expanded pointed tip. Second uncal plate furcate, the inner limb horn-like, the outer smooth, laterally directed; a large curved horn continuing the inner arm obliquely toward base. Articulated plate large, trigonate, infuscated. Basal hooks long, recurved, with pointed tips. Basal appendages rather large and long-elliptical, separated, oblique, with many rather long fine setæ.

The adult has the mesonotum bronzy brown, head with white lateral scales; legs dark brown, without knee-spots, the femora whitish below. Wing scales narrowly ovate, widest on forks of second vein.

Type, male, No. 22746, U. S. Nat. Mus.; "larvæ in a ditch, interior of colony, January, 1919," Surinam (J. Bonne-Wepster).

Culex (Choeroporpa) xivylis, new species.

Clasp-filament with the tip moderate, snout-shaped, the spine appendiculate. Outer division of lobe of side-piece short, a short broad inner arm, bearing a long hooked filament and a shorter blade-shaped one; middle filament and the three outer ones all close together and occupying the outer aspect of the lobe, reaching the base on account of the shortness of the lobe. Inner division of lobe of side-piece with the arms not separated, the inner about half as long as the outer, each with a long filament with bent hooked tip. Second uncal plate furcate, the inner limb horn-like, the outer pointed, laterally directed; a hook-like plate projecting from the base of the inner limb. First plate long and fan-shaped. Articulated plate very large, trigonate and deeply excavate at tip, infuscated. Plates at bases of side-pieces distinct, large, infuscated. Basal hooks long, recurved, pointed. Basal appendages moderate, elliptical, oblique, remote, setose.

The adult has the head scales partly whitish, mesonotum bright bronzy brown, abdomen black, with basal segmental narrow white bands. Legs blackish brown. Male palpi longer than the proboscis, pointed. Wing-scales moderately ovate on forks of second vein.

Types, four males, No. 22747, U. S. Nat. Mus.; (type) "larva in ground pool, interior of colony, January 24, 1919," Surinam (J. Bonne-Wepster); "pupa in rice field, coastal region, February, 1917," Surinam; "sandy district of colony, larvæ in pools," Surinam (J. Bonne-Wepster).

Larva. Head broad, rounded, cloudily infuscated; antennæ large, with a notch and large tuft at outer third, the base and all of the outer segment infuscated. Head-hairs both single, the upper delicate. Skin finely pilose on thorax and on end of anal segment. Lateral comb of the eighth segment of many small spines with widened tips in a triangulate patch four rows

deep, the posterior scales a little larger. Air-tube moderate, gently tapered, the pecten to about one-third, the outer teeth a little longer, tube about eight times as long as wide at base. Five pairs of hairs tufts along posterior margin, much dislocated, short and fine, decreasing in length toward apex.

The following genitalic table will separate the species here noticed.

1. Inner division of lobe of side-piece single, with two distorted appendages and a thin membrane.....*taeniopus* Dyar & Knab
Not so formed, the two filaments more or less separated..... 2
2. Clasp-filament with a horn-like tuft before tip; terminal spine uniform 3
Without this structure, the terminal spine generally widened and appendiculate 5
3. Anterior crest of clasp of appressed or consolidated spines..... 4
This crest composed of fine hairs.....*anips* Dyar
4. Terminal spine of clasp stout; anterior crest solid,
erraticus Dyar & Knab
This spine delicate; anterior crest of compressed spines,
peccator Dyar & Knab
5. Second plate of unci without a third point..... 6
This plate with a third point on stem or subapically..... 12
6. This plate simple with furcate tip..... 7
This plate with a triangular membrane from one limb, crossing the other and bent down.....*terebor* Dyar
7. Outer division of lobe of side-piece with a long filament from the base 8
Without this structure..... 9
8. Filaments at apex of this lobe triangularly leaf-like..*ybarmis* Dyar
A large triangular leaf and several long setæ,
alcocci Bonne-Wepster & Bonne
9. Outer division of lobe of side-piece with a leaf-like appendage.. 10
Without this structure..... 11
10. This lobe with a slender inner arm, the leaf from the base of this, ribbed.....*conspirator* Dyar & Knab
This arm short; leaf large, triangular, arising from among the outer group of setæ.....*nicceriensis* Bonne-Wepster & Bonne
11. One limb of the second uncal plate denticulate,
saramacensis Bonne-Wepster & Bonne
Both limbs of this plate smooth.....*elevator* Dyar & Knab
12. Second uncal plate serrate on the margin between the limbs.... 13
Without serrations between the limbs..... 15

13. Serration of second uncal plate slight; third spine basal on the stem.....*phlogistus* Dyar
Serration extensive; third spine subapical..... 14
14. A horn-like point on the serrated area between the outer limb and third spine.....*maroniensis* Bonne-Wepster & Bonne
Without this structure.....*albinensis* Bonne-Wepster & Bonne
15. Basal lobes long, finger-shaped, hairy at the end....*tecmarsis* Dyar
Basal lobes broad and rounded..... 16
16. Outer division of lobe of side-piece with a slender *outer* limb bearing a leaf..... 17
This part with an *inner* slender arm or none..... 19
17. Leaf-like appendage solitary, large..... 18
Leaf small, with accompanying filaments.....*phlabistus* Dyar
18. Inner division of lobe of side-piece spinose at basal outer angle,
coppnamensis Bonne-Wepster & Bonne
This part pilose only; leaf-arm shorter.....*invocator* Pazos
19. A slender-stemmed ribbed leaf arising from base of inner limb of outer lobe of side-piece.....*corentynensis* Dyar
Without this structure..... 20
20. A leaf-like appendage arising from the outer group of setæ of the outer division of lobe of side-piece, or from between these and the inner limb..... 21
Without a leaf-like appendage on outer division of lobe of side-piece 28
21. Leaf large, expanded, exceeding the filaments..... 22
Leaf medium or small, shorter than the filaments..... 24
22. Third spine of second uncal plate subapical,
mutator Dyar & Knab, *leprincei* Dyar & Knab
This spine medial on the stem; leaf from outer setal group..... 23
23. Clasp-filament narrowly snout-like.....*peribleptus* Dyar & Knab
Clasp-filament broad, *Mochlostyrax*-like.....*moorei* Dyar
24. Outer division of lobe of side-piece with a distinct inner limb... 25
Inner limb, if present, very short..... 27
25. Leaf-like appendage arising between the limb and group of setæ. 26
Leaf larger, accompanied by an expanded truncate filament, arising on stem of lobe.....*carcinophilus* Dyar & Knab
26. Basal hooks short.....*bastagarius* Dyar & Knab
Basal hooks long.....*vapulans* Dyar
27. A large leaf arising between the group of setæ and middle filament.....*comminutor* Dyar
A short fan-like leaf absorbing the short filaments.....*eastor* Dyar
28. Third spine of second uncal plate almost basal on the stem.... 29
This spine very stout, about the middle of stem..... 31
This spine near the tip, with the other limbs..... 32

29. Basal hooks long, broad, curled..... 30
 Basal hooks very short.....*tosimus* Dyar
30. Outer division of lobe of side-piece with the middle filament remote from the outer group.....*maxinocca* Dyar
 Middle filament and outer group approximate,
chrysonotum Dyar & Knab
31. Filament adjacent to middle filament of outer lobe of side-piece not widened, minute.....*educator* Dyar & Knab
 This filament widened-spatulate or narrowly leaf-like..*vaxus* Dyar
32. Second uncal plate with the inner arm dentate, the outer smooth; third horn just below the furcation..... 33
 Second uncal plate with the three points in a triangle, none dentate 34
33. Horn of second plate very large; middle filament of outer division of lobe of side-piece with a large insertion.....*bibulus* Dyar
 This horn small; middle filament without large insertion,
iolambda Dyar
34. Inner division of lobe of side-piece with the arms separated,
inhibitor Dyar & Knab
 These arms not separated, parallel on a common stem..... 35
35. Outer division of lobe of side-piece long, with inner filament inserted close to base, leaving the outer group of setæ on an arm.....*jonistes* Dyar
 This division short, with an inner arm..... 36
36. A long, squarely hooked filament from base near side of outer group of filaments of outer division of lobe of side-piece..*idottus* Dyar
 Without this structure.....*xivylis* Dyar

A NEW MOSQUITO FROM MEXICO

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

Aedes (*Heteronycha*) *muelleri*, new species.

Proboscis and palpi black; legs black, the basal portion of femora broadly white below, running narrowly nearly to tip; knee-spots white. Head and mesonotum light yellow scaled, the latter with two moderately broad dark brown bands, running back narrowly to the scutellum, and short narrow side stripes posteriorly. Abdomen black scaled, with basal, segmental, triangular, white, lateral patches in the female, becoming basal bands in the male; venter pale scaled, with a medio-

ventral black stripe, widening on the tips of the segments, and forming transverse bands on the posterior segments. Wing-scales narrow, hair-like, entirely deep black.

Male genitalia: Side pieces three times as long as wide, rounded at tip, uniform; both lobes obsolete; at the base, a very large spine, and remote from it two minute setaform spines, united by a narrow chitization. Harpago with long curved stem, and equally long narrowly sickle-shaped filament. Harpes normal. Basal appendages short, each with four spines.

Types, No. 22826, U. S. Nat. Mus.; male and female, Mexico City, Mexico (Juan Müller).

A very distinct species, of northern origin, the coloration much as in *diantaeus* H., D. & K., but the male genitalia essentially as in *pullatus* Coq.

A NEW NOCTUID FROM COLOMBIA

(*Lepidoptera*, *Noctuidæ*, *Acronyctinæ*)

By HARRISON G. DYAR

Monodes aphronistes, new species.

Fore wing dark purplish gray, marked with carneous red in basal space on costal half, narrowly subcostally above the stigmata, and forming a streak from beyond outer line to apex, but not a continuous costal pale shade. A black spot in sub-basal space before inner line, lines both narrow, faint, pale, denticulate, the outer curving in over reniform. Reniform and orbicular large, separate, powdery pale gray filled. Inner margin broadly irrorate with gray and carneous scales. Terminal space cut by the apical dash, which is bordered below by a black line. Hind wing pale sordid, fuscous on margin and fringe, the latter paler at anal angle. Expanse, 23 mm.

Type, female, No. 22803, U. S. Nat. Mus.; Bogota, Colombia, September 2, 1919 (F. Clark).

DESCRIPTIONS OF NEW CENTRAL AMERICAN
MICROLEPIDOPTERA

By AUGUST BUSCK

Parharmonia daturæ, new species.

Tuft on second joint of labial palpi rust red. Terminal joint canary yellow. Antennæ reddish brown. Face yellow. Head red mixed with black. Thorax reddish brown tipped with canary yellow. Forewings translucent, very thinly covered with yellowish brown scales and with a greenish sheen except on the edges and the veins which stand out in clear dark brown; underside iridescent golden yellow with reddish brown veins; cilia light brown. Hindwings transparent bluish iridescent with dark brown veins and edges and yellowish brown cilia. First two joints of abdomen bluish black, first with two canary yellow dorsal tufts; second with a few scattered yellow scales; third joint is bluish black with an anterior dorsal yellow transversal band; fourth joint canary yellow with black posterior margin; rest of the abdomen reddish brown with posterior edge of fifth and sixth joint yellow. Legs smooth, rust red with the tuft at the end of the posterior tibiæ black with a few yellow hairs. Male and female alike in coloration; male anal tuft straight, dirty yellow.

Alar expanse: male 20–22 mm.; female 28–30 mm.

Habitat: Mexico City, Mexico (Roberto Müller).

Food plant: *Datura*.

U. S. N. M., Type No. 22303.

Bred by Mr. Müller in large series from an ornamental *Datura* with large pendulous white flowers growing in his garden in Mexico City. The larvæ bore in the stem.

Ethmia similatella, new species.

Labial palpi white; second joint with outer and anterior part of base blackish brown and with an incomplete narrow black annulation before the tip; terminal joint with two broad black annulations, one at base and the other just before the apex. Face and head dirty yellowish white with a small black spot

on the top of the head. Thorax dirty white with a small black central spot, two small black lateral spots and two small black posterior tufts. Forewings with coastal half blackish brown nearly black dorsal half yellowish white; three obtuse triangular projections from the dark coastal half into the dorsal area and two in the intervals between the projections, one near the dorsal edge at basal third and another far removed from the edge on vein 3 at apical fourth; there is a small white area just above apex containing three black dots and four black dots along the edge at tornus. Cilia white except for the small spaces below apex, where the black part of the wing reaches termen. Hindwings dark fuscous with dirty white cilia. Abdomen blackish brown above with light fuscous underside; anal tuft bright ochreous. Legs dark brown with indistinct whitish tarsal annulations.

Alar expanse: 19–22 mm.

Habitat: Cayuga, Guatemala (W. Schaus).

U. S. N. M., Type No. 22304.

The species is very close and easily mistaken for *E. penthica* Walsingham of Mexico and *E. semiombra* Dyar of Texas, but clearly distinguished from both by small constant differences in ornamentation; *E. penthica* Walsingham is smaller and has the dark color-projections on the forewings much sharper, acute. From *E. semiombra* Dyar, which the present species most resembles, it can be distinguished by the much darker abdomen, by the lateral thoracic spots, and by the lack of white color on the costal edge.

Epagoge aurantica, new species.

Labial palpi canary yellow with outer side darker, ochreous. Face and head yellow. Thorax golden yellow. Forewings shiny metallic light golden yellow with darker old gold ornamentations; this consists of a curved and branched band from base of the wing to apex; one short branch goes to basal third of costa, another longer to apical third, one to base of dorsum, one to tornus, and one to termen; all these branches are narrowly edged with silvery white scales. Cilia golden yellow

with seven equidistant blackish brown hair pencils from apex to tornus. Hindwings light golden brown; cilia whitish brown, at apex golden yellow. Abdomen light golden brown with yellowish underside. Legs yellow with dusky tarsal joints.

Alar expanse: 16–25 mm.

Habitat: Juan Vinas, Costa Rica (W. Schaus).

U. S. N. M., Type No. 22305.

A very striking golden yellow species.

Sociphora, new genus (Family **Tortricidæ**).

Type: *Penthina magicana* Zeller.

Labial palpi long for the family, upward curved, reaching vertex. Second joint smooth with scale projections at apex; terminal joint short, blunt, erect. Thorax with posterior tuft of scales. Forewing with 12 veins, all separate, 7 to termen, 3 and 4 closely approximate from the end of the cell. Hindwings with 8 veins; 3 and 4 connate; 5 somewhat approximate; without basal pecten on lower margin of cell. Male genitalia with soci present and well developed; uncus single, hook-shaped; gnathus hook-shaped; harps simple; transtilla unarmed; aedeagus stout.

Zeller's two species *Penthina magicana* and *P. muscocana* (Stett. Ent. Zeitung, vol. 27, pp. 148–150, pl. 1, figs. 8 and 9, 1866), which were omitted in Meyrick's Revision of the Family *Tortricidæ* (Genera Insectorum Fasc., 149, 1913) are referable to this genus, as is the following new species, which is very similar to the two others.

Sociphora herbaria, new species.

Labial palpi light ochreous, second joint dark brown exteriorly. Face light ochreous. Head light ochreous mottled with dark brown. Thorax light yellow with a few scattered black scales and with black posterior tip. Patagia yellow mottled with black and bright green scales. Ground color of forewing creamy yellow, heavily overlaid and mottled with large black and dark brown patches, most of which are chagreened with bright green scales, giving the wings an olive green tone;

such a brown green-mottled area covers the base of the wing, a similar poorly defined large area is found on the cell and a third occupies the greater part of apical third of the wing except the extreme apex and a spot near tornus; a black second discal spot and a series of black costal spots; the remaining parts of the ground color is mottled with small irregular black and brown dots and streaks. Cilia yellowish with seven or eight heavy black pencils. Hindwings dark brown with yellowish cilia. Abdomen light brown with whitish underside. Legs light ochreous with dusky tarsal joints.

Alar expanse: 23-26 mm.

Habitat: Cayuga, Guatemala (W. Schaus).

U. S. N. M., Type No. 22310.

Hysterosia turialba, new species.

Labial palpi creamy white. Face, head and thorax creamy yellowish white. Forewings light ochreous fuscous with a strong iridescent sheen; costal edge darker fuscous with short dark brown streaks on basal half; at apical third is a large white ill-defined costal spot surrounding a blackish brown costal spot; at the end of the cell is a nearly circular creamy yellow spot; edged with black exteriorly; on the middle of the cell is a small black tuft of raised scales with a dark brown curved streak above and a reddish brown dot below on the fold; from apical fourth of costa to just above tornus runs an irregular transverse dark fuscous fascia, widest on the middle and edge basally with yellowish white at tornus is a curved rust-red streak and at apex are three rust-red spots edged with silvery white. Upperside of hindwings uniform light fuscous, underside irrorated with numerous broken transverse whitish lines. Abdomen dark fuscous lighter on the underside. Legs yellowish white with indistinct dusky tarsal annulations.

Alar expanse: 26-27 mm.

Habitat: Juan Vinas, Costa Rica, February (William Schaus).

U. S. N. M., Type No. 22306.

The forewings have vein 2 obsolete, but otherwise the species conforms with the other species of the genus.

Hysterosia gigantea, new species.

Labial palpi very long porrect, dark fuscous sprinkled with whitish scales. Head and thorax dark fuscous. Forewings dark fuscous indistinctly irrorated with white; on the middle costa is uneven semicircular dark brown spots slightly connected with an irregular oblong dark brown spot on the cell; from apical third of costa runs an oblique irregular dark brown fascia across the wing to tornus; all of these dark markings are narrowly edged with silvery white; costal edge mottled with dark brown dots. Hindwings light fuscous transversely irrorated with numerous yellowish white streaks on both sides of the wings. Abdomen dark fuscous with light underside. Legs ochreous evenly mottled with dark fuscous.

Alar expanse: 30–33 mm.

Habitat: Mexico City, Mexico (Roberto Müller).

U. S. N. M., Type No. 22307.

Lactura schausia, new species.

Labial palpi yellow with black tip. Face and head straw yellow. Antennæ black. Thorax bright orange yellow with costal apical and terminal edge to tornus narrowly black; a thin edge before the black border around apex and termen light golden yellow. Cilia light straw yellow. Hindwings orange yellow with apical fourth black; apical cilia light straw yellow, termen cilia black, dorsal cilia orange; underside of both wings deep orange with apical fourth black; costa of forewing also black. Abdomen dark brown with a narrow white annulation at the tip of each joint; basal joints orange.

Alar expanse: 23–26 mm.

Habitat: Volcan Sta. Maria, Guatemala, April (W. Schaus).

U. S. N. M., Type No. 22321.

The species flies, according to Mr. Schaus, in the forenoon in bright sunshine.

It is very similar in general habitus to *Lactura* (*Pseudotalara*) *regio* Schaus, *lateralis* Dyar and *schenoxantha* Schaus, but somewhat smaller and at once differentiated by the larger apical black area of the hindwings and by the dark, white annulated abdomen.

Zetesima theobromæ, new species.

Labial palpi white, second joint shaded with brownish fuscous exteriorly; terminal joint with a narrow black annulation around base and another broader one just before apex. Face white. Head brownish fuscous. Thorax brownish fuscous with small white posterior tuft. Forewings with basal half of costa greatly extended but not turned into a fold as in the other species of the genus, apical half thereby sharply deflected toward apex; light ochreous irregularly mottled with fuscous, black and white scales; a small white dot on the middle of the cell; two similar dots at the end of the cell and one below these on the fold. Hindwings blackish fuscous nearly black with lighter cilia and with costal edge whitish. Abdomen dark fuscous above, underside white, anal tuft ochreous. Legs whitish with black tarsal annulations. Venation typical, forewings with 2, 3 and 4 stalked, rest separate; hindwings 8 veins, 3 and 4 stalked.

Alar expanse: 14 mm.

Food plant: Cacao.

Habitat: Paramaribo, Dutch Guiana (A. Reyne).

U. S. N. M., Type No. 22324.

According to Mr. Reyne the caterpillars spin two cacao leaves together (but the leaves remain flat without curling in folding) and eat the soft parts, leaving the veins. The caterpillars move strongly if disturbed. Often many of the older leaves are skeletonized by them. Pupa in the same place; pupal stage 10 days. The mature caterpillar is 14 mm. long. Head light reddish yellow with a broad lateral longitudinal line of black, which includes the eyes; mouth-parts black. Thoracic shield inconspicuous in color, only slightly darker around the edges than the rest of the body, rectangular with central suture thin, whitish. Body dark brownish fuscous with small blackish brown tubercles and long whitish setæ; only tubercles 1 on second and third thoracic segments are larger, conspicuous dark brown; all setæ are long but seta 5 more especially so on all joints, longer than half the width of the body; thoracic feet

normal, blackish brown; abdominal prolegs normal with a complete single circlet of uniform crochets.

***Stenoma crambina*, new species.**

Labial palpi yellowish white strongly suffused with dark fuscous anteriorly and exteriorly. Face and head light yellowish fuscous. Male antennæ pectinate and with well-edveloped eyecap. Thorax light fuscous with a broad central longitudinal line of dark fuscous. Forewing narrow elongate, costa and dorsum parallel, apex pointed, termen oblique; stone white with a brownish tint suffused on dorsal third and along the veins with dark fuscous, a black dot at the end of the cell; a series of very indistinct marginal dark fuscous dots along terminal edge; cilia light fuscous. Hindwings very pale yellowish fuscous nearly white, somewhat darker toward apex and with a thin brownish line in the white cilia. Abdomen dark brown above, light ochreous on the underside. Legs whitish fuscous with dusky tarsal joints.

Alar expanse: 25-33 mm.

Habitat: Sierra de Guerrero, Mexico (R. Müller).

U. S. N. M., Type No. 22320.

***Stenoma tryphon*, new species.**

Labial palpi white, base of second joint suffused with dark brown; extreme base and tip of terminal joint brown. Face white with lower edge brown. Head white, collar brown. Thorax white with posterior tuft brown. Forewing stone white slightly overlaid with light fuscous and with a broad central dark brown fascia, containing a few black scales; this fascia is broadest on the costal and dorsal edges and sharply contracted in the middle by the basal and apical white part of the wing. Cilia white spotted with light fuscous. Hindwing light whitish fuscous on basal half, gradually darker fuscous toward apex; cilia whitish fuscous. Basal half of abdomen white, posterior end dark brown with dirty whitish anal tuft; underside whitish. Legs white with broad dark brown tarsal annulations.

Alar expanse: 19 mm.

Habitat: Cayuga, Guatemala (W. Schaus).

U. S. N. M., Type No. 22308.

Closely allied to *Stenoma lactis* Busck, differing in the white apical area of the forewings.

Stenoma orion, new species.

Second joint of labial palpi white with dark brown base and anterior edge dotted with single brown scales, also in the white part; terminal joint white with dark brown base, tip and anterior edge. Face white with lower edge brown. Head and collar brownish with a few white scales. Thorax white with two small anterior brown dots. Forewings with basal third white except the costal edge, which is broadly overlaid with dark fuscous with black brown and black scales; apical two-thirds of the wing and bluish white ornamentation; a black triangular spot at the end of the cell edged anteriorly with white, is followed by a larger slate-colored triangular area containing some bluish white streaklets; underneath this is a longitudinal narrow triangular reddish brown spot reaching the edge of the wing above tornus and edged with a white line, apical area light slate-colored with blackish longitudinal dashes; a thin line of bluish white dots around the edge of the wing; cilia dark fuscous. Hindwing broad triangular, dark fuscous with light cilia. Abdomen dark brownish fuscous above and below with white base and ochreous fuscous anal tufts. Legs dark fuscous; tarsal joint blackish with narrow white annulations; forelegs of male with large expansible tuft of blackish hairs on the tibia.

Alar expanse: 19–20 mm.

Habitat: Gayuga, Guatemala (W. Schaus).

U. S. N. M., Type No. 22309.

Closely allied to the foregoing species and to *S. lactis* Busck, which has a similar but much less developed whitish tuft on the anterior tibiæ of the males.

Stenoma extenta, new species.

Labial palpi dark olive brown, second joint with base and inner side white. Face light fuscous. Head and thorax dark

olive brown. Forewings long and narrow with costa and dorsum nearly parallel and termen straight, but the wing is broadened in both sexes on basal half by a large flat triangular tuft of scales projecting from dorsal edge; dark olive brown nearly black with a minute light ochreous dot at the base and a similar one within the costal edge at basal third, there is also an indistinct slight ochreous streak on outer part of the fold. Cilia dark brown with a thin basal ochreous line. Hindwings very broad triangular, in the male further broadened by a flat tuft of scales on basal half of costa; dark fuscous. Underside of both wings white on lower basal half in the males, uniform dark fuscous in the females. Abdomen dark fuscous with underside narrowly yellowish white. Legs white shaded above with dark fuscous.

Alar expanse: 24–26 mm.

Habitat: Cayuga, Guatemala (W. Schaus).

U. S. N. M., Type No. 22311.

Nearest and quite similar to *S. vanis* Busck in form but a much darker species.

***Stenoma graphica*, new species.**

Second joint of labial palpi dark brown exteriorly, inner side and apical joint yellowish white. Face, head and thorax light ochreous. Forewings dark olive brown with costal edge and apical part of terminal edge broadly light ochreous nearly white, strongly contrasting with the dark wing; a small tornal area ochreous white with concolorous cilia; middle part of terminal cilia dark brown concolorous with the wing. Hindwing light brown with extreme apex ochreous white; at apical fourth is a flat projecting costal scale tuft. Abdomen dark brown with ochreous anal tuft. Legs light ochreous.

Alar expanse: 23 mm.

Habitat: Sixola River, Costa Rica (W. Schaus).

U. S. N. M., Type No. 22312.

***Stenoma laetifica*, new species.**

Labial palpi ochreous white mottled with fuscous; terminal joint with base and extreme tip dark fuscous. Face, head and

thorax ochreous white, sprinkled with darker ochreous scales, thorax with black posterior tuft. Forewings with ochreous white iridescent ground color heavily overlaid with darker ochreous scales; an indistinct and ill-defined large triangular costal shade of dark ochreous contains a small black center; opposite is a large much more prominent darker dorsal semi-circular spot containing a black dot and a sprinkling of black scales; a small black dot at the end of the cell; an imperfect outwardly curved line of dark ochreous and black scales across the wing at apical fifth followed by an ill-defined black spot just before the edge on the middle of termen; extreme terminal edge and apex ochreous; cilia ochreous with small black equidistant pencils. Hindwing dark golden brown. Abdomen dark brown, with yellowish underside containing median and lateral rows of black dots. Legs light ochreous with dusky tarsal annulations.

Alar expanse: 23-24 mm.

Habitat: Cayuga, Guatemala (W. Schaus).

U. S. N. M., Type No. 22313.

***Gonioterma rita*, new species.**

Labial palpi pale fawn-colored, second joint with inner side white and with a black posterior streak at base. Face white. Head pale fawn. Thorax and forewing light fawn colored; costal edge light yellow with a thin black streak at base of the wing, a triangular purplish black spot on the middle of costa, and a similar smaller costal spot at apical fourth. A small black dot at the end of the cell; a marginal series of light or more equidistant small black dots along termen and a sub-marginal slightly outwardly bent, transverse row of similar black dots from the last costal spot to tornus. Cilia yellowish fuscous. Hindwings light yellowish fawn, with cilia on inner edge and at tornus pure white. Abdomen pale fawn with golden white underside and with three small blackish brown lateral dots. Posterior legs pure white; tarsal annulation black above, rusty brown below. Anterior legs light brown. Under-side of body white.

Alar expanse: 25 mm.

Habitat: British Guiana (C. M. Beebe).

U. S. N. M., Type No. 22314.

Gonioterma conchita, new species.

Labial palpi light yellowish brown, second joint with dusky base. Face yellowish white. Head light ochreous brown. Thorax light reddish brown. Forewings light brown with two dusky blackish brown ill-defined triangular costal spots, one just beyond the middle of the wing, the other at apical fifth; from the latter runs an indistinct outwardly curved dusky line across the wing to tornus; costal edge narrowly yellowish; a marginal series of twelve small equidistant black dots begins above apex and continues beyond tornus; a small indistinct darker brown discal spot at the end of the cell; cilia yellowish brown. Hindwings light yellowish brown, darker at apex. Abdomen yellowish brown with whitish underside. Legs dirty white with indistinct dusky tarsal annulations.

Alar expanse: 23-25 mm.

Habitat: Cayuga, Guatemala (W. Schaus).

U. S. N. M., Type No. 22315.

Very close to the foregoing species but darker, less distinctly marked, and without the striking white hindlegs.

Gonioterma anita, new species.

Labial palpi yellowish white, second joint with exterior basal half dark brown; apical point with extreme tip black. Face yellowish white. Head light stone gray. Thorax and forewings stone gray with a yellowish tint and with blackish brown spots; three of these are more conspicuous than the rest, one on the middle of costa, one at apical fourth of costa, and one on the end of the cell; a smaller spot on the middle of the cell and one on basal fourth of costa are more fugitive and are lost in rubbed specimens; from the outer costal spot runs an outwardly curved series of similar small black dots; apical half of the wing is more or less irregularly sprinkled with black scales. Cilia whitish. Hindwings yellowish white. Ab-

domen yellowish fuscous above with white underside. Anal tuft yellowish. Legs yellowish white.

Alar expanse: 19–22 mm.

Habitat: Cayuga, Guatemala; Maroni, French Guiana; Juan Vinas, Costa Rica (W. Schaus); British Guiana (C. W. Beebe); Porto Bello, Panama (August Busck).

U. S. N. M., Type No. 22316.

Very close to *G. stella* Busck, but smaller, with less mottled forewings and less yellowish hindwings without the dark marginal line. Very similar in pattern to *Stenoma diatribe* Walsingham, though with less pronounced costal spots.

Dorata nigritella, new species.

Labial palpi dirty white sprinkled with brown and black scales. Head and thorax dirty white. Forewings dirty white suffused with dark fuscous and black scales in longitudinal streaks along the veins, which are imperfectly indicated thereby; dorsal edge dark fuscous; cilia blackish brown. Hindwing very dark brownish fuscous, nearly black. Abdomen still darker, nearly black, with extreme tip ochreous. Legs dark fuscous.

Alar expanse: 26–28 mm.

Habitat: Venadio, Sinaloa, Mexico (gift of B. P. Clark).

U. S. N. M., Type No. 22317.

The small size and the very dark hindwings on abdomen easily distinguish this species. The forewings have vein 2 obsolete, but otherwise the species conforms with the other species of the genus.

Acrolophus robertus, new species.

Antenna pectinate; light ochreous. Labial palpi very long recurved, reaching to posterior tip of thorax, evenly clothed with rather short yellowish brown scales with dark brown bases. Thorax dark brown, each hair tipped with yellow. Ground color of forewing light yellowish brown, a well-defined conspicuous downwardly curved band of dark brown from base of costa down to the fold and up to apical third of costa; on the bottom of this curve is a pure white semicircular spot on

the fold, containing a few black scales. Costal edge lined with numerous small equidistant dark brown dashes, terminal edge solidly dark brown; dorsal edge irregularly dotted with black and dark brown. Hindwing dark brown with lighter ochreous brown base. Abdomen dark brown above, ochreous brown on the under side. Legs ochreous brown with blackish brown annulations on the tarsi and tibiae.

Alar expanse: 28–30 mm.

Habitat: Zacualpan, Mexico (Roberto Müller).

U. S. N. M., Type No. 22318.

All veins separate in both wings; 7 to termen in the forewing.

***Acrolophus signatus*, new species.**

Antennæ shortly pectinate light yellow. Labial palpi short for the genus, reaching vertex; first joint thickened with rough scales, second and third thin, slender, erect, about the same length as first. Head dark fuscous. Thorax dark fuscous sprinkled with ochreous scales. Forewings light ochreous suffused with dark fuscous; a conspicuous well-defined dark brown marking in the shape of a large W begins near base of costa, runs to middle of dorsum, thence to middle of costa, to near tornus and up to the tip of the wing; extreme base of the wing dark brown; the light portions of costa dotted with dark brown. Hindwings light fuscous with the veins showing darker. Abdomen dark brown above, ochreous on the under-side. Legs ochreous mottled with dark brown.

Alar expanse: 15–17 mm.

Habitat: Chiapas, Mexico (Roberto Müller).

U. S. N. M., Type No. 22319.

Forewings with veins 8 and 9 stalked.

NEW GENERA AND SPECIES OF AUSTRALIAN
MYMARIDÆ*(Hymenoptera)*

By A. A. GIRAULT

The following were discovered while revising the members of this family, and have been compared with the types, through the kindness of the Queensland Museum. All from northern Queensland except one or two.

Polynema ara, new species.

Fore wing with three equidistant, conspicuous cross-stripes, distal two irregular, joined midlongitudinally and marginally; hind wing fuscous distal half. Red-brown, antennæ abdomen's body black; funicles five times longer than wide, scape short, dilated. Fringes third width of fore wing, 25 lines fine discal cilia. Scaly.

Forest, Nelson, July 24, 1918, male.

Polynema signum, new species.

Like *sieboldi*, but jet, coxa 1 black, so antennæ save scape and pedicel.

Ravenshoe, jungle, March 13, 1919.

Polynema aequum, new species.

Like *nordai*, but colored like *spenceri*, save that tibiae 2 and 3 pale at basal half; funicles 2 and 3 not elongate, equal and longest, but 1 and 2 longest, twice longer than wide, 3-5 short-ovate; discal cilia reaching venation in two converging lines from either side of middle, meeting against marginal.

Nelson, February.

Polynema filius, new species.

Like *aligherini*, but fringes nearly two-thirds width, tibiae 3 somewhat darkened, funicle 6 black, often 4 and 5; discal cilia attaining venation in a point which continues as a single line toward middle of submarginal.

Nelson.

Polynema silvæ, new species.

Like *pax*, but connecting discal cilia of fore wing colorless. scape darker, funicle 1 black.

Anaphoidea australia, new species.

Like *galtoni*, but funicles 2 and 3 equal, fringes disto-cephalad distinctly shorter than those caudo-distad, tarsal 1 equal others, fringes only three-fourths width.

Nelson, kitchen window, April 5, 1919.

Ooctonus centaurus, new species.

Like *australiensis*, but fore wing with a midlongitudinal stripe of fuscous from apex to middle.

Goondi, jungle, September.

Goetheana shakespearei, new genus and species.

Antennæ 8-jointed, one ring-, one funicle joint, tarsi 4-jointed, club with long silky hairs. Fore wing as in *Anagrus*, but marginal elongate, reaching distal fourth, stigmal oblique and normal. Hind wing without cephalic marginal cilia, those caudad very long. Thorax as in *Polynema*, abdomen as *Gonatocerus*; a phragma extends to abdomen.

Black, wings clear, abdomen, legs golden, two marginal spots on each side of abdomen near apex. Pedicel thrice longer than wide at apex, much exceeding following joints. Funicle a bit longer than wide, so clubs 1 and 4, 2 and 3 wider than long. Fore wing 4-5 lines discal cilia.

Greenhills, near Cairns, January 31, 1919.

Dicopus victoria, new species.

Like *maximus*, but funicles 1-2 equal, a bit longer than wide, 3 and 4 equal, twice 1, 5 somewhat shorter than 4, 6-7 ovate, shorter, longer than 1 or 2.

Herberton, March 11, 1919, with a female *maximus*.

Erythmelus superbus, new species.

Same as *cinctus*, but very much larger (plainly visible to eyes), tibiæ golden, basal third middle, apex hind, tibiæ dusky, funicles 1-2 equal, half longer than wide, 6 longer than pedicel;

tarsals distinctly longer. At apex, 9 lines discal cilia on fore wing.

Ravenshoe, jungle, March 13, 1919.

Erythmelus quadrimaculatus, new species.

Like *kantii*, but golden, club, ocellar area, distal third abdomen, propodeum save median line, a cuneus each side meson scutum, cephalic and paraspide and a spot on axilla, jet, also metapleurum. Basal limit of discal cilia with large, obtuse emargination, one cephalic line attaining venation.

Meringa, near Cairns, December.

Paranaphoidea tennysoni, new species.

Ovipositor one-sixth abdomen. Jet, median line scutum, scutellum, lateral angles of latter, face, cheeks, portion of vertex, scape, pedicel, prepectus, legs save coxa 3 and femur 3 save at ends, golden. Funicle 6 globose. Extruded ovipositor valves silvery, black at tip. Like *caudata*.

Forest, Cairns, January.

Anthemus emersoni, new species.

Fore wing practically naked; funicle 5 elongate, as wide as club. Head, scutum, not quite distal half abdomen, funicle and club, spot hind end of paraspide, black. Otherwise much as in *hilli*.

Nelson, window.

Camptoptera vasta, new species.

As in *greyi*, but funicle 1 three-fourths of 2, twice longer than wide, 3 longest, thrice longer than wide, 2 equal 4 and a bit shorter, 5 and 6 ovate, 5 longer than 1. Discal cilia fore wing with the midlongitudinal lines rather far from apex and of six widely spaced setæ reaching far toward venation. Club somewhat shorter.

Nelson, window.

Alaptus apterus, new species.

As *newtoni*, but funicle 1 yet shorter, a bit longer than wide,

half of 2, which is somewhat longer. Greyish black, scutellum orange, legs pale. No wings.

Taken with types *Eomymarus maximus*, two females.

Alaptus aureus, new species.

As *newtoni*, but lemon, funicles 1-3 equal, each two times longer than wide; midlongitudinal discal cilia 2-4 in a straight line halfway between apex and venation. Funicles 4-5 ovate.

Windows, Mulgrave Mill, Nelson, February.

Gonatocerus dodo, new species.

As *pachyscapa*, but funicle 1 longer than wide, rest half longer than wide, scape somewhat less dilated, fore wings less densely ciliate in disk.

Brisbane, forest, H. Hacker.

Gonatocerus petrarchi, new species.

Funicles 1-3 much longer than wide, following globular; otherwise much as in *fasciatiiventris*, but scutellum with but black center at base and abdomen with haired marginal dots.

Pt. Douglas, March. Also Nelson.

Gonatocerus hallami, new species.

Funicles 2, 3 and 7 nearly thrice longer than wide, rest a third shorter. As *petrarchi*, but head yellow.

Nelson, forest, March.

Gonatocerus macauleyi, new species.

As *pachyscapa*, but funicles 1-2 equal, quadrate, rest twice longer than wide, median line and margins scutum yellow and lateral margins scutellum.

Forest, Watsonville, March 12, 1919.

Gonatocerus pater, new species.

As *angustiventris*, but a line of discal cilia long marginal forming a V with a caudal line, funicles 1-2 equal, 5 longest.

Forest, Watsonville, March.

Gonatocerus nuntius, new species.

As *angustiventris*, but scape like *pachyscapa*, first legs

golden save coxæ, tibial tips more distinctly yellow, funicles quadrate, 1 much smaller.

Forest, Watsonville, March.

Stethynium longfellowi, new species.

Funicles 1-4 equal, twice longer than wide, rest subglobular. Ovipositor distinctly, shortly extruded. Lemon, club and a spot on cephalic axilla black. As *latipenne*.

Forest, Watsonville, March 12, 1919.

Stethynium shakespearei, new species.

As *longfellowi*, but a cuneus each side cephalic scutum and thorax above caudad scutellum, black.

Wynnum, window, November 11, 1918.

Stethynium mutatum, new species.

As *latipenne*, but hind wing without discal cilia midlongitudinally, funicles twice wider than long.

Irvinebanke, March.

Stethynium tenerum, new species.

As *mutatum*, but scutum black, scutellum same between median and lateral grooves save margins, four distinct cross-stripes on abdomen. Small, stout.

Irvinebanke, March 15, 1919.

A NEW NOCTUID FROM ARIZONA

(*Lepidoptera, Noctuidæ, Mominæ*)

By HARRISON G. DYAR

Zazunga moës, new species.

Antennæ dark straw-yellow. Head and thorax dark gray, mixed with white; a black line near tip of tegulæ. Fore wing dark gray, irrorated with black; inner line pale-filled, with a black edge above, which is outward from costa to median vein and inward below that, the line being dislocated outward in submedian space. Orbicular a round black ring, filled with the

ground-color, without black center. Claviform a broad pale shade, without edges, irrorated with red-brown scales. Reniform large, pale, indistinctly black-outlined, the center nearly white, without included markings. Outer line pale, dentate, in-drawn below cell, distinctly remote from the margin. Subterminal line pale, indistinct, retracted above vein 6, denticulate centrally, black-edged within below vein 2. A narrow terminal black line, broken by the veins. Hind wing white, a little touched with gray at apex; terminal line black, distinct, broken by the veins. Expanse, 35 mm.

Type, male, No. 22802, U. S. Nat. Mus.; Washington Mountains, Arizona, date and collector missing (gift of B. Preston Clark).

TWO NEW NORTH AMERICAN MOTHS

(*Lepidoptera*)

By HARRISON G. DYAR

NOCTUIDÆ

AGROTINÆ

Episilia impingens, new species.

Male antennæ lengthily pectinated almost to the tip. Light fawn-gray, the thorax shaded darker in front. Fore wing with the lines blackish, crenulate, the inner somewhat shaded and broadly waved, the outer dentate on the veins, both a little shaded on costa and inner margin. Subterminal line faint, pale. Orbicular a blackish dot; reniform small, lunate. Hind wing blackish brown, the fringe a little paler, disk between the veins thinly scaled. Expanse, 36 mm.

Type, male, No. 22815, U. S. Nat. Mus.; East New York, Long Island, New York, May 18, 1903 (J. Doll). A female also is before me from the same collecting.

Near *E. manifesta* Morr., but wholly without the reddish color of that species.

In Hampson's Catalogue of the Lepidoptera Phalaenae (1903), two species of *Episilia*, placed in his section II, characterized by having the male antennæ with moderate branches

should be transferred to section I, with the antennal pectinations long. These are *manifesta* Morr. and *monochromatea* Morr. According to the text, only females were before the author at the time, which accounts for the misplacing.

The species referred to may be separated as follows:

Male antennæ with long pectinations, running nearly to the tip.

Fore wing with the lines crenulate.

Stigmata present, blackish filled.

Fore wing brown, often shaded with carneous at base,
manifesta Morrison

Fore wing light fawn-gray.....*impingens* Dyar
Stigmata absent.

No dark markings in median space,
monochromatea Morrison

A dark patch between the obsolete stigmata,
interclusa Walker

PYRALIDÆ

CRAMBINÆ

Platytes vobisne, new species.

Fore wing silvery white; a dark brown line through discal fold to beyond end of cell; a shorter line close to it above, shaded with lighter brown; a light brown mark from costa and a dark brown line below cell, both converging beyond the end of the first line, but not quite touching; a half line along submedian fold; an oblique line arising from middle of inner margin, indented by the submedian half-line, then oblique to the convergence point, where it ends; a brown and black irrorate shade from it to termen; an outer light brown line from outer third of inner margin, sharply angled inward on submedian, then again outward to termen at convergence shade; a triangular brown patch at apex, with an oblique costal line below it, running to convergence area; a dark terminal area, triangularly widened above submedian; fringe white, with black-brown line and tip. Hind wing blackish, the fringe white, interlined, the dark tip nearly obsolete. Expanse, 13 mm.

Type, male, No. 22816, U. S. Nat. Mus.; Elk Point, South Dakota, August, 1913 (C. N. Ainslie); five paratypes, Portland, Connecticut, June 30, 1914 (B. H. Walden).

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THE CLASSIFICATION OF AMERICAN AEDES

(Diptera, Culicidæ)

By HARRISON G. DYAR

Recently (Ins. Ins. Mens., vi, 75, 1918), I gave a table of American *Aedes*, dividing the genus into groups on the characters of the male hypopygium. These groups may properly be called subgenera, and with recent changes in nomenclature, stand as follows:

1. Claspette developed, with filamentous seta and columnar base.....2
Claspette rudimentary, a short seta from a conical base,
Howardina Theobald
Claspette absent.....3
2. Side-piece with apical and basal lobes,
Heteronycha Lynch Arribalzaga
Side-piece with basal lobe, no apical one,
Tacniorhynchus Lynch Arribalzaga
Side-piece without lobes.....*Finlaya* Theobald
3. A hairy or spinose lobe at base of side-piece.....4
Without this structure; basal membrane expanded or modified,
Stegomyia Theobald
4. Lobe at base of side-piece complex; clasper modified, furcate
and with a basal branch.....*Aedes* Meigen
This lobe simple; clasper without basal branch, though some-
times modified at apex.....*Ecculex* Felt

The subgenus *Heteronycha* (for the use of the name see Ins. Ins. Mens., vii, 88, 1919) may be considered to include groups iv and v of my former paper, as I think *canadensis*, the only species in Group V, should not properly be separated as a subgenus. So taken, the subgenus may be divided into groups, still using the characters of the male hypopygium.

The present arrangement is new, replacing that of the former table (Ins. Ins. Mens., vi, 75, 1918), although based on the same principle. I give the groups the names of the oldest American species. The north European species belong to the same groups, and their names will generally be older than ours, so that when the faunæ are combined, these will prevail; but I have not yet had the opportunity to compare that fauna exhaustively, besides which the synonymy of the European forms has not been settled on the present basis of specific subdivision.

TABLE OF GROUPS OF HETERONYCHA

1. Basal lobes modified, obsolete as such, but leaving a large spine on one side and two approximate setæ on the other, the latter sometimes obsolete.....Group *pullatus*
Basal lobes more or less developed.....2
2. Basal lobe elongate, semidetached, the setiferous part separated from the spine.....Group *serratus*
Basal lobe sessile, the setæ not apart from the spine, or spine wanting3
3. Basal lobe more or less expanded and tubercular, with or without a spine.....4
Basal lobe uniformly long-haired; no spine.....8
4. Basal lobe expanded, with many setæ, but without a single differentiated long spine; if the marginal spines are thickened, more than one is involved.....Group *currici*
Basal lobe with a single differentiated spine, or if absent, the lobe is flat and rugose.....5
5. Apical lobe with short, flat, clinging setæ.....Group *punctor*
Apical lobe with the setæ normal, or slightly thickened.....6
6. Setæ on apical lobe more or less well-developed; filament of claspette without retrose spine.....7
Setæ on apical lobe practically absent; filament of claspette with retrose spine.....Group *scapularis*
7. Setæ on apical lobe more or less distinctly outwardly directed when the lobe is retracted, not functioning as organs of prehension, tending to obsolescence.....Group *impiger*¹
Setæ on apical lobe inwardly directed, often distinctly functional, though occasionally obsolescent.....Group *stimulans*

¹ Using *impiger* in the sense of *decticus*.

8. Apical lobe with short, curved, clinging setæ, not flat,

Group *thibaulti*

Setæ on apical lobe normal.....9

9. Setæ on apical lobe long, more or less outwardly directed,

Group *trichurus*

Setæ on apical lobe very short and few, inwardly directed,

Group *innuitus*

The described species are assigned to the groups as follows:

Group *serratus*

<i>dupreei</i> Coq.	<i>atlanticus</i> D. & K.
<i>tormentor</i> D. & K.	<i>serratus</i> Theob.
<i>eucephalaenus</i> Dyar	<i>nubilus</i> Theob. (<i>polyagrus</i> Dyar)
<i>oligopistus</i> Dyar	<i>pertinax</i> Grabham
<i>hortator</i> D. & K.	<i>mathisi</i> Nev.-Lem. ¹
<i>fulvus</i> Wied.	<i>bimaculatus</i> Coq.

Group *scapularis*.

<i>trivittatus</i> Coq.	<i>angustivittatus</i> D. & K. ¹
<i>bilineatus</i> Theob. ¹	<i>cuneatus</i> D. & K. (<i>argentescens</i> D. & K.)
<i>infirmatus</i> D. & K.	<i>obturbator</i> D. & K. ¹
<i>euplocamus</i> D. & K.	<i>scapularis</i> Rond. (<i>camposanus</i> Dyar)
<i>condolescens</i> D. & K. ¹	<i>bracteatus</i> Coq. ¹
<i>plutocraticus</i> D. & K.	<i>tortilis</i> Theob.
<i>balteatus</i> D. & K. ¹	<i>crinifer</i> Theob.
<i>dolosa</i> Arrib.	
(<i>lynchii</i> Brethes) ¹	

Group *pullatus*

<i>intrudens</i> Dyar	<i>diantaeus</i> H., D. & K.
<i>pullatus</i> Coq.	<i>aurifer</i> Coq.
<i>muelleri</i> Dyar	

Group *punctor*

<i>spencerii</i> Theob.	<i>idahoensis</i> Theob.
<i>aldrichi</i> D. & K.	<i>hirsuteron</i> Theob.
<i>aestivalis</i> Dyar	<i>vinnipegensis</i> Dyar ¹
<i>punctor</i> Kirby	<i>aboriginis</i> Dyar
<i>cyclocerculus</i> Dyar	<i>leuconotips</i> Dyar
<i>hexodontus</i> Dyar	<i>fisheri</i> Dyar

Group *impiger* (*decticus*)

<i>lazarensis</i> F. & Y.	<i>tahoensis</i> Dyar
<i>pionips</i> Dyar	<i>altiusculus</i> Dyar
<i>niphadopsis</i> D. & K.	<i>impiger</i> Walk. (<i>decticus</i> H. D. & K.)

¹ Male unexamined and position of species not verified.

<i>prodotes</i> Dyar	<i>cataphylla</i> Dyar
Group <i>curriei</i>	
<i>campestris</i> D. & K.	<i>callithotrys</i> Dyar
<i>curriei</i> Coq.	<i>canadensis</i> Theob.
<i>albifasciatus</i> Macq.	
Group <i>stimulans</i>	
<i>excrucians</i> Walk.	<i>aloponotum</i> Dyar ¹
<i>mutatus</i> Dyar	<i>increpitus</i> Dyar
<i>fletcheri</i> Coq.	<i>stimulans</i> Walk.
<i>mercurator</i> Dyar	<i>cantator</i> Coq.
<i>fitchii</i> F. & Y.	<i>mimesis</i> Dyar
<i>palustris</i> Dyar	<i>riparius</i> D. & K.
<i>grossbecki</i> D. & K.	<i>squamiger</i> Coq.
Group <i>thibaulti</i>	
<i>thibaulti</i> D. & K.	
Group <i>trichurus</i>	
<i>trichurus</i> Dyar	<i>cinereoborealis</i> F. & Y
<i>poliochros</i> Dyar ¹	
Group <i>innuitus</i>	
<i>innuitus</i> D. & K.	<i>nearcticus</i> Dyar

¹ Male unexamined and position of species not verified.

It is intended to treat of these groups separately as opportunity serves.

THE AMERICAN AEDES OF THE STIMULANS GROUP

(Diptera, Culicidæ)

By HARRISON G. DYAR

The species of this group inhabit temperate North America, Europe, and Asia. As far as this holarctic region is concerned, they may be defined as *Aedes* of the subgenus *Heteronycha* with white rings at the bases (only) of the tarsal joints. This marking is repeated in other subgenera of *Aedes* and in *Heteronycha* also in Australia; but for the region in question it is distinctive.

The species are not separable in all cases on the coloration of the female adults; but the male hypopygium is character-

istic. The larvæ also show good characters. The basis of classification adopted is the male hypopygium. The larvæ show a different series of adaptations. The present study is confined to the American forms, leaving the European ones aside, both as to their relations to each other and to the American ones.

The adults divide into three series: 1. *excrucians*; 2. *stimulans*; 3. *fitchii*. Series 1 contains the species *excrucians* and *increpitus*; series 2, *fletcheri*, *stimulans*, and *cantator*; and series 3, *fitchii*, *riparius*, *grossbecki*, and *squamiger*.

The larvæ of series 2 have the air-tube stout and fusiform with broad tracheæ, as is usual in the genus, elongated only in *fletcheri*; figured, *fletcheri*, Monog., ii, pl. 117, fig. 403, 1912; *stimulans*, Monog., ii, pl. 63, 1912; *cantator*, Monog., ii, pl. 67, 1912.

Series 1 has the air-tube of the larva of this same type as to *increpitus* (Ins. Ins., Mens., v, pl. ii, "*sansoni*," 1917); but *excrucians* has the "long-tubed" type, in which the outer half of the air-tube is narrowed and the tracheæ reduced in width (Monog., ii, pl. 65, "*abfitchii*," 1912).

In series 3 most of the species have the "long-tubed" type of larva (*fitchii*, Monog., ii, pl. 64, 1912; *riparius*, unknown; *grossbecki*, Monog., ii, pl. 69, 1912); but *squamiger* has reverted to the "short-tubed" type (Monog., pl. 122, fig. 422, 1912).

The peculiarities of the air-tube are an adaptation to habits, the long-tubed type being adapted to pools containing vegetation of a semipermanent character, the short-tubed type to open, transient pools. Since differences in habit are one of the most potent factors and conditions of specific differentiation, these larval characters are excellent indices of specific validity; but being essentially adaptational, they do not form a guide to phylogenetic relationships, for which the hypopygium seems well adapted.

As to coloration, the primitive marking has been retained in some members of all the series, the name-species, *excrucians*, *stimulans*, and *fitchii* being practically indistinguishable. In

series 1, no change has occurred. In series 2, *fletcheri* has assumed a yellow color and become indistinguishable from *riparius*, with which it flies in the Canadian prairies, while *cantator* has the markings dulled and the tarsal rings narrowed, till it closely resembles the wholly unrelated *vexans* Meigen. This in adaptation to its salt-marsh habitat. In series 3, *riparius* has become yellow, as noted above, while *grossbecki* and *squamiger* have acquired distinctive enlarged wing-scales, upon which an author was induced to found a genus.¹ Of these two, *grossbecki* maintains a precarious existence in the east along the Atlantic region, while *squamiger* is a salt-marsh form of the Pacific coast, to which habitat it has frankly abandoned itself, in larval structure as well.

In the following table, based on the male hypopygium, the first insert indicates the series, the second the species, the third the subspecies, under which latter heading the forms will be discussed.

Basal lobe of the side piece without a spine or tuft of setæ, flat; apical lobe with short normal setæ, pointed inwardly (series 1).

1. Rugose area of basal lobe reaching up to apical lobe,
excrucians Walker

2. Rugose area of basal lobe not reaching beyond middle of side-piece.

Filament of claspette angularly expanded beyond middle;
spines of ninth tergites longer.....*increpitus* Dyar

Filament of claspette angularly expanded toward base;
spines of ninth tergites shorter.....*mutatus* Dyar

Basal lobe with a strong distinct spine, free, accompanied by few setæ; lobe flat; apical lobe with normal setæ, pointed inward (series 2).

3. Basal lobe rugose nearly to apical lobe; filament of claspette angularly expanded at basal third....*fletcheri* Coquillett

4. Basal lobe round, not longer than broad, rugose; filament of claspette expanded at middle.

Setæ of apical lobe coarser than the ordinary vestiture,
mississippii Dyar

Setæ of apical lobe about the same size as the vestiture,
classicus Dyar, *stimulans* Walker

Setæ of apical lobe distinctly weaker than the vestiture,
albertæ Dyar

¹ *Lepidoplatus* Coquillett, Science, n. s., xlii, 314, 1906.

- Setæ of apical lobe very small and short....*mercurator* Dyar
5. Basal lobe a small setiferous area next to the spine; filament of claspette thick, angularly bent in middle,
cantator Coquillett
- Spine of basal lobe strong or weak, accompanied by many setæ; basal lobe conical; apical lobe with short, slightly thickened, somewhat curved setæ (series 3).
6. Filament of claspette shortly and slenderly sickle-shaped, with more or less distinct basal notch.
 Spine of basal lobe fairly strong; spines of ninth tergites long.....*fitchii* Felt & Young
 Spine of basal lobe weaker; spines of ninth tergites long,
mimicis Dyar
 Spine of basal lobe much weaker; spines of ninth tergites very long.....*palustris* Dyar
7. Filament of claspette with a broad expansion the whole length; basal lobe highly conical, with strong spine,
riparius Dyar & Knab
8. Filament of claspette short and smoothly widened; basal lobe moderate, with very strong spine,
grossbecki Dyar & Knab
9. Filament of claspette long, angularly widened at middle; basal lobe moderate, with strong spine...*squamiger* Coquillett

SERIES 1

SPECIES 1

***Aedes excrucians excrucians* Walker.**

Culex excrucians Walker, Ins. Saund., Dipt., 429 1856.

Culex excrucians Giles, Gnats or Mosq., 260, 1900.

Culex cantans Dyar (not Meigen), Proc. Ent. Soc. Wash., vi, 38, 1904.

Culex cantans Dyar (not Meigen), Journ. N. Y. Ent. Soc., vii, 36, 1904.

Culex cantans (No. 1) Dyar & Knab (not Meigen), Proc. Ent. Soc. Wash., vi, 143, 1904.

Culex abfitchii Felt, Bull. 79, N. Y. State Mus., 381, 1904.

Culicada abfitchii Felt, Bull. 79, N. Y. State Mus., 391c, 1904.

Culex siphonalis Grossbeck, Can. Ent., xxxvi, 332, 1904.

Culex abfitchii Dyar, Journ. N. Y. Ent. Soc., xiii, 29, 1905.

Culicada abfitchii Felt, Bull. 97, N. Y. State Mus., 475, 1905.

Culex excrucians Blanchard, Les Moust., 312, 1905.

Culex siphonalis Smith & Grossbeck, Psyche, xii, 16, 1905.

- Grabhamia abfitchii* Dyar, Journ. N. Y. Ent. Soc., xiii, 186, 1905.
Culex siphonalis Smith, N. J. Agr. Exp. Sta., Rept. Mosq., 243, 1905.
Aedes abfitchii Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 193, 1906.
Ochlerotatus abfitchii Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. ser. 11, 20, 1906.
Ochlerotatus abfitchii Dyar, U. S. Dept. Agr., Bur. Ent., Circ. 72, 4, 1906.
Culicada abfitchii Theobald, Mon. Culic., iv, 328, 1907.
Culicada siphonalis Theobald, Mon. Culic., iv, 330, 1907.
Culex abfitchii Smith, Can. Ent., xxxix, 119, 1907.
Aedes sansoni Dyar & Knab, Can. Ent., xli, 102, 1909.
Aedes stimulans Dyar (not Speiser), Proc. Ent. Soc. Wash., xi, 149, 1909.
Aedes riparius Gibson (in part), Rep. Ent. Soc. Ont., 1908, 109, 1909.
Culicada abfitchii Theobald, Mon. Culic., v, 296, 1910.
Culex excrucians Theobald, Mon. Culic., v, 350, 1910.
Aedes abfitchii Morse, Ann. Rep. N. J. State Mus., 1909, 718, 1910.
Aedes abfitchii Headlee, Bull. 276, N. J. Agr. Exp. Sta., 76, 1915.
Aedes abfitchii Felt, 31st. Rept. N. Y. State Ent., 66, 1916.
Aedes sansoni Howard, Dyar & Knab (in part), Mosq. N. & Cent. Am. & W. I., iv, 686, 1917.
Aedes abfitchii Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 688, 1917.
Aedes euedes Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 714, 1917.
Aedes excrucians Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 862, 1917.
Aedes sansoni Dyar (in part), Ins. Ins. Mens., v, 114, 1917.
Aedes euedes Dyar, Ins. Ins. Mens., vi, 78, note, 1918.
Aedes excrucians Dyar, Ins. Ins. Mens., vii, 25, 1919.
Aedes excrucians Dyar, Ins. Ins. Mens., viii, 12, 1920.

As fully discussed in the last references quoted, this species flies in the northern forests from the Atlantic Ocean to Alaska. It avoids the open dry country, but extends southward in the eastern wooded country as far at least as New Jersey. The larvæ are found in the early spring pools, generally of some depth and containing vegetation.

SPECIES 2

***Aedes increpitus mutatus* Dyar.**

Grabhamia vittata Theobald (not Bigot), Can. Ent., xxxv, 313, 1903.

Grabhamia vittata Blanchard (not Bigot), Les Moust, 397, 1905.

Ochlerotatus vittata Coquillett (not Bigot), U. S. Dept. Agr., Bur. Ent., Tech. ser. 11, 20, 1906.

Grabhamia vittata Theobald (not Bigot), Mon. Culic., iv, 306, 1907.

Aedes vittatus Dyar (in part, not Bigot), Proc. U. S. Nat. Mus., xxxii, 126, 1907.

Grabhamia vittata Theobald (not Bigot), Mon. Culic., v, 284, 1910.

Aedes vittata Howard, Dyar & Knab (not Bigot), Mosq. N. & Cent. Am. & W. I., iv, 691, 1917.

Aedes sansoni Dyar (not Dyar & Knab), Ins. Ins. Mens., v, 114, 1917.

Aedes sansoni Cockerell (not Dyar & Knab), Journ. Econ. Ent., xi, 199, 1918.

Aedes mutatus Dyar, Ins. Ins. Mens., vii, 24, 1919.

This species flies through the river valleys of the arid region from Montana to New Mexico. Though the adult is close to *excrucians* in appearance and genitalic structure, the larvæ are very different. They breed in early river-pools following the high water of spring.

***Aedes increpitus increpitus* Dyar.**

Aedes vittatus Dyar (in part, not Bigot), Proc. U. S. Nat. Mus., xxxii, 126, 1907.

Aedes increpitus Dyar, Ins. Ins. Mens., iv, 37, 1916.

Aedes increpitus Dyar, Ins. Ins., Mens., v, 14, 1917.

Aedes vittata Howard, Dyar & Knab (in part, not Bigot), Mosq. N. & Cent. Am. & W. I., iv, 691, 1917.

Aedes increpitus Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 1041, 1917.

This form inhabits the Sierra Nevada Mountains of California, extends down to the coast in the forested region of Humboldt County where the mountains approach the sea, thence rather rare in the Coast Range. The larvæ live in early pools formed by rivers or the edges of lakes.

SERIES 2

SPECIES 3

Aedes fletcheri fletcheri Coquillett.

Culex fletcheri Coquillett, Proc. U. S. Nat. Mus., xxv, 84, 1902.

Ochlerotatus fletcheri Coquillett, U. S. Dept. Agr., Bur. Ent., Tech ser. 11, 20, 1906.

Aedes fletcheri Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 11, 1907.

Aedes fletcheri Knab, Smiths. Misc. Colls., Quart. iss., 1, 544, 1908.

Culex fletcheri Theobald, Mon. Culic., v, 485, 1917.

Aedes fletcheri Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 675, 1917.

Aedes fletcheri Dyar, Ins. Ins. Mens., v, 113, 1917.

Aedes fletcheri Cameron, Agr. Gaz. Can., v, 557, 1918.

Aedes fletcheri Cameron, Jn. Am. Med. Vet. Assn., liii, 633, 1918.

Aedes fletcheri Dyar, Ins. Ins. Mens., vii, 27, 1919.

A localized form of limited distribution, found on the Canadian prairies and the forest adjoining from western Ontario to eastern British Columbia. Mr. Knab found the larvæ in early spring-pools, associated with those of *spencerii* and *curriei*, although he found that they thrive best in the deeper reedy pools of a more permanent character. There is thus a tendency toward the habits of the "long-tubed" type of larva, accompanied by the appropriate modification of structure. The yellow color of the adults is probably an adaptation to the prevailing tone of the open prairie.

Aedes fletcheri aloponotum Dyar.

Aedes aloponotum Dyar, Ins. Ins. Mens., v, 98, 1917.

Aedes aloponotum Dyar, Ins. Ins. Mens., viii, 27, 1920.

In the absence of a male, this form can be only tentatively placed. I am inclined provisionally to regard it as a western race of *fletcheri* inhabiting the moist Pacific Coast strip. Additional data are as follows: Lake Cushman, Washington, July 3, 4, 5, 1920 (H. G. Dyar); Hoodspout, Washington, July 6, 7, 1920 (H. G. Dyar); Ashford, Washington, August 1, 1906 (Dyar & Caudell); Nanaimo, British Columbia, August 6, 1906 (Dyar & Caudell); Mission, British Columbia, July 14, 1919 (E. Hearle); Harrison, British Columbia, June 20, 1919

(E. Hearle); Agassiz, British Columbia, May 23, 1919 (E. Hearle).

The occurrence of this form in the Fraser Valley is unexpected, and perhaps forms a transition to *fletcheri fletcheri*. The specimen from Mount Cheam, British Columbia, recorded in the monograph, is a normal *fletcheri*. On the other hand, specimens from forested Ontario have much the appearance of *aloponotum*, except for the absence of the red mesonotal integument; but these are females and may prove to be *riparius*, so that positive conclusions cannot be drawn.

SPECIES 4

Aedes stimulans mississippii, new subspecies.

Mesonotum uniformly brownish, dark brown centrally, gray on the sides, the marking not contrasted; abdomen with basal segmental white bands; tarsi with moderate or rather narrow white rings at the bases of the joints; wings with many white scales, especially in the costal region. Male hypopygium as in *stimulans*, but the setæ on the outer lobe of the side-piece very coarse, distinctly coarser than the general vestiture.

Types, male and female, No. 22884, U. S. Nat. Mus.; Electric Mills, Mississippi, "from water in tree-stumps" (J. A. LePrince).

A southern race of *stimulans*. The peculiar habitat indicated by the single collection needs amplification.

Aedes stimulans classicus, new subspecies.

Culex cantans Smith (not Meigen), Ent. News, xiii, 300, 1902.

Culex cantans Smith (not Meigen). Bull. 171, N. J. Agr. Exp. Sta., 24, 1904.

Culex cantans Smith (not Meigen), N. J. Agr. Exp. Sta., Rep. Mosq., 240, 1905.

Culicada subcantans Theobald (in part not Felt). Mon. Culic., iv, 324, 1907.

Aedes subcantans Morse (not Felt), Ann. Rept. N. J. State Mus., 1909, 718, 1910.

Aedes subcantans Headlee (not Felt). Bull. 276, N. J. Agr. Exp. Sta., 72, 1915.

Coloration as usual, the mesonotum largely dark brown. The form is described at length in Smith's "Report on the

Mosquitoes of New Jersey," pages 240-243, 1905, under the name of *Culex cantans*. The male hypopygium (figured, with insufficient enlargement, fig. 43, No. 11, of the work cited) has the apical lobe moderately haired as in *stimulans stimulans*, but the shape of the filament of the claspette differs rather conspicuously, not being long, slender and pale with an angular notch beyond the middle, but only moderately long, thick and dark, roundedly swollen about the middle.

The habits as described by Smith differ from those of *stimulans stimulans*, the larvæ being said to occur in early ground pools with leaves, associated with *canadensis*.

Characterized from one female and two males, Hudson County, New Jersey, bred from fresh-water pools near the salt marsh, May 20, 1920 (W. R. Bryce-Delaney). Type, No. 23111, U. S. Nat. Mus. Also Fort Wadsworth, New York, May 20, 1920 (through Dr. C. S. Ludlow).

***Aedes stimulans stimulans* Walker.**

Culex stimulans Walker, List Dipt. Brit. Mus., i, 4, 1848.

Culex stimulans Giles, Gnats or Mosq., 245, 1900.

Culex stimulans Theobald, Mon. Culic., 1, 399, 1901.

Culex cantans Theobald (not Meigen), Mon. Culic., i, 401, 1901.

Culex cantans Giles (not Meigen), Gnats or Mosq., 2 ed., 244, 1902.

Culex cantans Dyar (not Meigen), Journ. N. Y. Ent. Soc., xii, 174, 1904.

Culex cantans Felt (not Meigen), Bull. 79, N. Y. State Mus., 284, 1904.

Culicada cantans Felt (not Meigen), Bull. 79, N. Y. State Mus., 391b, 1904.

Culicada subcantans Felt, Bull. 97, N. Y. State Mus. 448, 1905.

Aedes subcantans Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 202, 1906.

Ochlerotatus subcantans Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. ser. 11, 20, 1906.

Ochlerotatus subcantans Dyar, U. S. Dept. Agr., Bur. Ent., Circ. 72, 6, 1906.

Culicada subcantans Theobald (in part), Mon. Culic., iv, 324, 1907.

Aedes subcantans Knab, Smiths. Misc. Colls., Quart. iss., i, 547, 1908.

Culex (Culicada) stimulans Speiser, Schr. d. Physik.-ökonom. Ges. zu Königsb., xlix, 391, 1908.

Culicada maculatus Theobald (in part, not Meigen), Mon. Culic., v, 296, 1910.

Culicada subcantans Theobald, Mon. Culic., v, 297, 1910.

Culicada subcantans de Meijere, Tidsk. v. Ent., liv, 146, 1911.

Aedes subcantans Felt, Rept. N. Y. State Ent., 31, 66, 1916.

Aedes stimulans Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 679, 1917.

This form inhabits the northern Atlantic region westward to the plains. The larvæ occur in early pools, especially those that have been actually overflowed by high water rather than seepage-filled. The female adult cannot be certainly distinguished from *excrucians* and *fitchii*, with which it flies.

***Aedes stimulans albertae*, new subspecies.**

Aedes stimulans Dyar, Ins. Ins. Mens., viii, 12, 1920.

Mesonotum brightly marked, dark brown in broad central stripe and shaded posterior-lateral ones, the sides light yellow; abdomen with narrow basal abdominal white bands; wing-scales wholly black.

Types, two males and one female, No. 22885, U. S. Nat. Mus.; Edmonton, Alberta, Canada, May 11, 14, 17, 1919 (H. G. Dyar).

This form was bred from larvæ in early marsh-pools with other early species. The differences in the larvæ from *stimulans stimulans* have been discussed in the literature quoted.

***Aedes stimulans mercurator* Dyar.**

Aedes mercurator Dyar, Ins. Ins. Mens., viii, 13, 1920.

This race inhabits the Yukon Valley in Yukon Territory and presumably in Alaska also. The larvæ are essentially as in *stimulans stimulans*, though separated from that subspecies; but the male hypopygium continues the modification, which progressively increases northwestward, of reduction of the setæ on the outer lobe of the side-piece.

SPECIES 5

***Aedes cantator cantator* Coquillett.**

Culex sp? (salt marsh), Smith, Ent. News, xii, 301, 1902.

Culex cantans Dyar (not Meigen), Proc. Ent. Soc. Wash., v, 47, 1902.

- Culex cantator* Coquillett, Can. Ent., xxxv, 255, 1903.
Culex cantator Smith, N. J. Agr. Exp. Sta., Bull. 171, 22, 1904.
Culex cantator Felt, Bull. 79, N. Y. State Mus., 293, 1904.
Culicada cantator Felt, Bull. 79, N. Y. State Mus., 391b, 1904.
Culex cantator Dyar, Journ. N. Y. Ent. Soc., xiii, 28, 1905.
Grabhamia cantator Dyar, Proc. Ent. Soc. Wash., vii, 48, 1905.
Culex cantator Smith, N. J. Agr. Exp. Sta., Rep. Mosq., 231, 1905.
Culex cantator Britton & Viereck, Rep. Conn. Agr. Exp. Sta., 1904, 268. 1905.
Culex cantator Blanchard, Les Moust., 629, 1905.
Culicada cantator Felt, Bull. 97, N. Y. State Mus., 476, 1905.
Aedes cantator Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 200, 1906.
Ochlerotatus cantator Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. ser. 11, 20, 1906.
Ochlerotatus cantator Dyar, U. S. Dept. Agr., Bur. Ent., Circl. 72, 5, 1906.
Culex cantator Smith, Can. Ent., xxxix, 119, 1907.
Culicada cantator Theobald, Mon. Culic., iv, 334, 1907.
Culex (Ochlerotatus) cantator Viereck, 1st Ann. Rep. Comm. Health Pa., 471, 1908.
Culicada cantator Theobald, Mon. Culic., v, 301, 1910.
Aedes cantator Morse, Ann. Rep. N. J. State Mus., 1909, 718, 1910.
Aedes cantator Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 700, 1917.

A species of restricted local distribution, confined to the salt marshes of the Atlantic coast from Maine to Maryland. Locally abundant, but giving rise to no derivative races. The coloration of the adults is much as in *Aedes (Ecculex) vexans* Meigen, although the two are wholly unrelated.

SERIES 3

SPECIES 6

Aedes fitchii fitchii Felt & Young.

- Culex cantans* Johannsen (not Meigen), Bull. 68, N. Y. State Mus., 419, 1903.
Culex cantans (No. 2) Dyar & Knab (not Meigen), Proc. Ent. Soc. Wash., vi, 143, 1904.
Culex fitchii Felt & Young, Science, n. s., xx, 312, 1904.

- Culex fitchii* Felt, Bull. 79, N. Y. State Mus., 281, 1904.
Culicada fitchii Felt, Bull. 79, N. Y. State Mus., 391c, 1904.
Culex fitchii Dyar, Journ. N. Y. Ent. Soc., xii, 246, 1904.
Culex fitchii Felt, Bull. 97, N. Y. State Mus., 451, 1905.
Culicada fitchii Felt, Bull. 97, N. Y. State Mus., 475, 1905.
Grabhamia fitchii Dyar, Journ. N. Y. Ent. Soc., xiii, 186, 1905.
Aedes fitchii Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 199, 1906.
Ochlerotatus fitchii Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. Ser. 11, 20, 1906.
Ochlerotatus fitchii Dyar, U. S. Dept. Agr., Bur. Ent., Circ. 72, 5, 1906.
Culicada fitchii Theobald, Mon. Culic., iv, 321, 1907.
Aedes fitchii Knab, Smiths. Misc. Colls., Quart. iss., 1, 545, 1908.
Culicada fitchii Theobald, Mon. Culic., v, 299, 1910.
Aedes fitchii Morse, Ann. Rep. N. J. State Mus., 1909, 718, 1910.
Aedes fitchii Headlee, Bull. 276, N. J. Agr. Exp. Sta., 88, 1915.
Aedes fitchii Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 682, 1917.
Aedes fitchii Dyar, Ins. Ins. Mens., vii, 26, 1919.
Aedes fitchii Dyar, Ins. Ins. Mens., viii, 15, 1920.

This form inhabits the eastern forested region, extending to the Canadian plains, where it seems to merge into the next subspecies. The larvæ are found in the early spring pools of a marshy or semipermanent character, the adults flying until late in the summer.

***Aedes fitchii mimesis* Dyar.**

- Aedes abfitchii* Dyar (not Felt & Young), Ins. Ins. Mens., v, 103, 1917.
Aedes mimesis Dyar, Ins. Ins. Mens., v, 116, 1917.
Aedes mimesis Cameron, Agr. Gaz. Can., v, 557, 1918.
Aedes mimesis Cameron, Jn. Am. Vet. Med. Ass., liii, 633, 1918.
Aedes mimesis Cockerell, Jn. Econ. Ent., xi, 199, 1918.
Aedes fitchii Dyar (in part), Ins. Ins. Mens., viii, 15, 1920.

In the last quoted reference I discuss the differences shown by the western race of *fitchii* in the larvæ, but state that there is no name applicable to the form. Pending further research, I propose to apply the name *mimesis* in this sense. The type locality is Montana, the larvæ undescribed. I take the general habitat to include the Rocky Mountain region from Montana to the Yukon Valley.

***Aedes fitchii palustris* Dyar.**

Aedes palustris Dyar, Ins. Ins. Mens., iv, 89, 1916.

Aedes palustris var. *pricei* Dyar, Ins. Ins. Mens., v, 16, 1917.

Aedes (?) *increpitus* Dyar, Ins. Ins. Mens., v, 98, 1917.

Aedes palustris Dyar, Ins. Ins. Mens., viii, 27, 1920.

This form inhabits the Californian mountains, the Olympics and Vancouver Island, and is probably continuous in the Coast Ranges through Oregon and Washington. It has not been found in the Cascade Range.

SPECIES 7

***Aedes riparius riparius* Dyar & Knab.**

Aedes riparius Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 213, 1907.

Aedes riparius Gibson (in part), Rep. Ent. Soc. Ont., 1908, 109, 1909.

Aedes riparius Theobald, Mon. Culic., v, 485, 1910.

Aedes riparius Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 712, 1917.

Aedes riparius Dyar, Ins. Ins. Mens., v, 113, 1917.

Aedes riparius Dyar, Ins. Ins. Mens., vii, 27, 1919.

A species of very local distribution. The only known locality is Winnipeg, Manitoba, other localities being doubtful in the absence of males. The female adults are practically indistinguishable from *fletcheri*. The larva is unknown.

SPECIES 8

***Aedes grossbecki grossbecki* Dyar & Knab.**

Culex squamiger Smith (not Coquillett), N. J. Agr. Exp. Sta., Bull. 171, 37, 1904.

Culex squamiger Smith (not Coquillett), Ent. News, xv, 80, 1904.

Culex squamiger Smith & Grossbeck (not Coquillett), Psyche, xii, 13, 1905.

Culex squamiger Smith (not Coquillett), N. J. Agr. Exp. Sta., Rep. Mosq., 221, 1905.

Culex squamifer Blanchard (in part), Les Moust., 630, 1905.

Aedes grossbecki Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 201, 1906 (separates issued March 15).

Culex sylvicola Grossbeck, Can. Ent., xxxviii, 129, 1906 (April).

- Lepidoplatys squamiger* Coquillett (in part), U. S. Dept. Agr., Bur. Ent., Tech. ser. 11, 18, 1906.
- Aedes grossbecki* Dyar, U. S. Dept. Agr., Bur. Ent., Circ. 72, 6, 1906.
- Culex squamiger* Howard (not Coquillett), Osler's Mod. Med., i, 376, 1907.
- Lepidoplatys squamiger* Theobald (in part), Mon. Culic., iv, 501, 1907.
- Lepidoplatys sylvicola* Theobald, Mon. Culic., iv, 501, 1907.
- Lepidoplatys squamiger* Theobald (in part), Mon. Culic., v, 453, 1910.
- Culex sylvicola* Theobald, Mon. Culic., v, 612, 1910.
- Aedes sylvicola* Morse, Ann. Rept. N. J. State Mus., 1909, 718, 1910.
- Aedes grossbecki* Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 708, 1917.

A rare and local species, taken in scattered localities from New Jersey to Mississippi.

SPECIES 9

***Aedes squamiger squamiger* Coquillett.**

- Culex squamiger* Coquillett, Proc. U. S. Nat. Mus., xxv, 85, 1902.
- Culex squamiger* Felt, Bull. 79, N. Y. State Mus., 281, 1904.
- Culicada squamiger* Felt, Bull. 79, N. Y. State Mus., 391c, 1904.
- Grabhamia de niedmannii* Ludlow, Can. Ent., xxxvi, 234, 1904.
- Culex squamiger* Blanchard (in part), Les Moust., 630, 1905.
- Grabhamia niedmanni* Blanchard, Les Moust., 631, 1905.
- Grabhamia de niedmanni* Ludlow, Can. Ent., xxxviii, 132, 1906.
- Lepidoplatys squamiger* Coquillett, Science, n. s., xxiii, 314, 1906.
- Lepidoplatys squamiger* Quayle, Bull. 178, Univ. Cal. Agr. Exp. Sta., 41, 1906.
- Taniorhynchus squamiger* Quayle, Can. Ent., xxxviii, 27, 1906.
- Lepidoplatys squamiger* Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. ser. 11, 18, 1906.
- Culex squamiger* Grossbeck, Can. Ent., xxxviii, 129, 1906.
- Aedes squamiger* Dyar, Proc. U. S. Nat. Mus., xxxii, 126, 1906.
- Lepidoplatys squamiger* Theobald (in part), Mon. Culic., iv, 501, 1907.
- Lepidoplatys squamiger* Theobald (in part), Mon. Culic., v, 453, 1910.
- Aedes squamiger* Dyar, Ins. Ins. Mens., iv, 50, 1916.
- Aedes squamiger* Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 705, 1917.

A local species, confined to the salt marshes of the Pacific coast from San Francisco to San Diego. It is probably to be considered as a derivative of *grossbecki*; but the differentiation is clearly of a specific degree.

THE LARVA OF *Aedes campestris* DYAR & KNAB

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

Discovery of this larva was made in April, 1920, in the salt marshes at Garfield, Utah, a station about 15 miles from Salt Lake City. The marshes contain much grass, the water being derived from seepage from mineral springs, and distinctly saline and unpleasant to the taste. The larvæ associated in the marshes consisted of a small percentage of *niphadopsis* D. & K., the remainder being *curriei* Coq. and *campestris* D. & K., the latter present in about 15 per cent of the early emergencies.

Larva. Head rounded, about as broad as long, light yellowish; hairs, upper in threes (varying from two to four), lower single and large. Antennæ moderate, spinulated, the tuft at the middle. Skin glabrous. Lateral comb of the eighth segment a patch of about 24 broadly oval scales, fringed with coarse spinules, uniform, except that the terminal spine occasionally appears stouter than the rest, but slightly. Air-tube about three times as long as wide, conically tapered, pecten reaching somewhat beyond the middle, of about 30 scales, evenly spaced, the last three stouter and a little more distantly placed than the others, followed by a 4-haired tuft. Anal segment with the dorsal plate reaching about the middle of the side, irregularly edged, pale. Ventral brush with four preceding tufts. Anal gills rudimentary.

The larva is similar to that of *curriei*, differing in the head hairs, which are normally both single in *curriei*, and in the pecten of the air-tube, which in *curriei* has less teeth, the terminal ones not being incrassated.

UNDESCRIBED SPECIES IN THE OSTEN SACKEN
COLLECTION OF NEW ZEALAND
CRANE-FLIES

(*Diptera, Tipulidæ*)

BY CHARLES P. ALEXANDER

Subsequent to his return to Europe and the selection of his final abode in Heidelberg in 1877, Baron Osten Sacken amassed a very considerable collection of the crane-flies of New Zealand, chiefly through the efforts of Prof. George V. Hudson. From these rich collections only a very few of the new species were described by Osten Sacken, but in the intervening period additional collections by Hudson have been carefully studied and reported upon by Captain Hutton, so that most of the species have now been diagnosed.

A proportion of this crane-fly material ultimately came into the possession of the German Entomological Museum at Berlin-Dahlem, and through the kindness of the Director, Dr. Walther Horn, the writer has been able to examine some of the doubtful species in this collection, and the new species resulting from this study are discussed in this paper. The types of the novelties are preserved in the collection of the German Entomological Museum, and paratypes of certain of the species in the collection of the writer.

I wish to express my sincere thanks to Dr. Horn for the privilege of examining this historical collection of crane-flies.

Genus LIMNOPHILA Macquart

Limnophila novae-zelandiae, new species.

Head gray; mesonotum brownish gray, the praescutum with four reddish brown stripes; wings nearly hyaline, the posterior half more brownish; a series of brown spots in cell R ; a large blotch at the stigma; R_s long, r far from the tip of R_1 ; inner ends of cells R_3 and 1st M_2 more proximad than R_5 ; basal deflection of Cu_1 a short distance beyond the fork of M .

Female.—Length, about 15 mm.; wing, 15 mm.

Rostrum light brown; palpi dark brown. Antennæ with the scapal segments brownish yellow, the flagellar segments indistinctly bicolorous, the base of each segment being a little darker than the rest, the segments elongate-cylindrical. Head light gray, rather strongly narrowed behind.

Mesonotal praescutum brownish gray with four reddish brown stripes, the intermediate pair narrow, indistinct anteriorly, running parallel to about midlength, then suddenly bent outward, from which point they converge to near the suture; lateral stripes short and broad; pseudosutural foveæ large but pale in color; remainder of the mesonotum reddish, gray pruinose. Pleura brown, gray pruinose. Halteres rather short, brown. Legs with the coxæ gray; trochanters obscure yellow; remainder of the legs dull yellow, the tarsi broken; pubescence of the legs moderately long, semierect. Wings nearly hyaline on the anterior half, the posterior half of the disk more brownish; a dusky clouding across the submarginal and posterior cells; cells *C* and *Sc* faintly more yellowish; a rather heavy brown pattern, arranged as follows: A series of small brown spots in cell *R*, arranged in two groups, the second at the origin of *Rs*; stigmal area large, extending obliquely back along *Rs* to near midlength of the latter; a subocellate blotch at the end of vein R_2 ; very narrow, but dark brown seams along the cord, outer end of cell *1st M*₂, fork of M_1+2 , fork of R_2+3 , *r*, the tip of *Sc* and at the ends of the longitudinal veins; veins brown, darker in the dark markings. Venation: *Sc*₁ extending to about opposite the fork of R_2+3 , *Sc*₂ some distance from the tip, *Sc*₁ alone being about equal to the deflection of R_4+5 ; *Rs* long, strongly arcuated at its origin; R_2+3 very short, about as long as *r-m*; cell *R*₂ long and narrow, its inner end pointed, its outer end suddenly widened; *r* on *R*₁ some distance from its tip, *R*₁ beyond *r* being subequal to that section of *R*₂ before it; inner ends of cells *R*₃ and *1st M*₂ much farther proximad than *R*₅; cell *1st M*₂ long, the basal deflection of *Cu*₁ a short distance beyond the fork of *M*; *m* one-half the outer deflection of *M*₃; petiole

of cell M_1 only about one-third to one-half the cell and about one-half of cell $1st\ M_2$; vein $2nd\ A$ gently sinuous.

Abdomen reddish brown. Ovipositor with the tergal valves long and slender, gently upcurved.

Habitat.—New Zealand.

Holotype, ♀, Otago (from Osten Sacken's collection).

Paratopotype, 1, sex?

Genus GYNOPLISTIA Westwood

Gynoplistia bona, new species.

Antennæ with 16 segments, flagellar segments 2 to 8 with very short pectinations; general coloration light gray, the abdomen with a delicate brown median line both above and below; wings long and narrow, subhyaline, cell M and the posterior cells pale brown; a few pale brown dots on the wing-surface; male hypopygium of a simple limnophiline organization.

Male.—Length about 14 mm.; wing, 11 mm., its greatest width, 2.2 mm.

Female.—Length about 14–15 mm.; wing, 9.5–9.6 mm., its greatest width, 1.9 mm.

Rostrum brown; palpi dark brown. Antennæ with the scapal segments reddish brown, the flagellum dark brown; flagellum with 14 segments, the pectinations very short, scarcely exceeding the length of the segments that bear them; the first flagellar segment is broadly produced; segments 2 to 8 pectinate, 9 to 14 simple. The pectinations are presumably short in both sexes, although the single authentic male is injured. Head brownish, the anterior part of the vertex, the inner margins of the eyes, and a conspicuous median line light gray.

Mesonotal praescutum reddish, light gray pruinose, with three ill-defined, pale brown stripes that are best indicated at their anterior ends, the median stripe more distinct; pseudo-sutural foveæ large and conspicuous, cherry-red, the proximal ends pointed; the humeral margin cephalad of the foveæ dark colored; remainder of the mesonotum light gray. Pleura clear light gray. Halteres short, brown, the knobs dark brown. Legs with the coxæ light gray; trochanters reddish brown;

remainder of the legs comparatively stout, reddish brown, the tips of the segments scarcely darkened, the tarsi darker brown. Wings comparatively long and narrow, subhyaline, the subcostal cell more yellowish; a pale brown suffusion near the middle of the wing, including cell *M* except at the ends; stigma dark brown; small, paler brown dots at the origin of *Rs*, along the cord, tips of veins *R*₂ and *R*₃ and less distinctly on the other longitudinal veins; a brown spot in cell *2nd A* just beyond midlength; in other specimens there is sometimes a dot or two near the origin of *Rs*, near the base of cell *R* and in cell *1st A* on a level with the end of vein *2nd A*; veins dark brown, *Sc* more yellowish. Venation: *Sc* ending just beyond the fork of *Rs*, *Sc*₂ at the tip of *Sc*₁ but indistinct; *Rs* long, strongly arcuated to feebly angulated at origin; *r* about twice its length from the tip of *R*₁ and near one-third the length of *R*₂; *R*₂+₃ very short to practically lacking, approximately as long as *r*; *r-m* very short; cell *1st M*₂ very small, subrectangular, the basal deflection of *Cu*₁ near the middle of its length; cell *M*₁ very narrow, a little longer than its petiole, which is about twice cell *1st M*₂; *2nd Anal* vein slightly sinuous.

Abdomen reddish brown, sparsely gray pruinose; a narrow, dark brown median line on both the tergites and sternites. Male hypopygium black, of a simple limnophiline organization, the pleural appendages subequal in length, the outer appendage slender, the extreme apex split into two short, acute points; the inner pleural appendage is a flattened blade with the apex obtusely rounded; gonapophyses slender, acute, diverging rods. Ovipositor with the valves dark chestnut, very long and slender, the acute tips strongly upcurved.

Habitat.—New Zealand.

Holotype, ♂ (from Osten Sacken's collection).

Allotopotype, ♀.

Paratopotypes, 7 ♂ ♀, some broken.

The specific name, *bona*, applied to this species is a manuscript name of Osten Sacken's, appearing on some of the pins. The fly is remarkably distinct from other New Zealand species, the long, narrow wings suggesting the early stages of wing-

atrophy. This may be the species mentioned by Osten Sacken (Berl. Ent. Zeitsch., vol. 31, pt. 2, p. 211, 1887) as having rudimentary wings in both sexes.

Gynoplistia sackeni, new species.

Antennæ of the male with 17 segments, the third to fifteenth with very long, slender branches; thoracic pleura light gray; wings subhyaline, the apex darkened; a large, subquadrate brown blotch at the origin of *Rs*; a conspicuous brown seam on the cephalic half of the cord; cell 1st *M*₂ long-rectangular; male hypopygium light yellow with the outer pleural appendage bifid, the short arms nearly equal and parallel.

Male.—Length about 11 mm.; wing, 11 mm.

Rostrum and palpi light brown. Antennæ with the first segment reddish brown; flagellum dark brown; antennæ with 17 segments, the first to thirteenth flagellar segments with long, flabellate branches, the longest exceeding in length the basal four flagellar segments taken together; terminal two segments simple; the pectinations are provided with long, erect pubescence, each tipped with one or two bristle-like verticils; the pectination of the first flagellar segment is about three times the length of the segment that bears it, that of the thirteenth segment about as long as the segment that bears it. Head dull gray; a large blackish spot behind each antennal base; occiput reddish.

Mesonotum light gray, the praescutum with three reddish brown stripes, the median stripe broadly divided by a gray line; remainder of the mesonotum brown, heavily gray pruinose. Pleura reddish, heavily light gray pruinose. Halteres light brownish yellow, the knobs darker brown. Legs with the coxæ light gray pruinose; trochanters light yellow; femora brownish yellow, the tips indistinctly darkened; remainder of the legs light brown, the outer tarsal segments darker. Wings subhyaline, the wing-tip darkened; cells *C* and *Sc* light brown; stigma long-oval, dark brown; conspicuous brown markings arranged as follows: A blotch at the base of cell *R*; a large, subquadrate area at the origin of *Rs*; a conspicuous seam extending from the stigma to cell 1st *M*₂; basal deflection of

Cu_1 , the outer end of cell 1st M_2 and the fork of M_1+2 narrowly seamed with brown; pale brown clouds in cell Cu_1 along vein Cu ; one or two spots in the basal half of cell M ; a small brown cloud along vein 1st A beyond midlength; veins dark brown. Venation: Sc_2 at the tip of Sc_1 ; Rs long, angulated at origin; r at the tip of R_1 and on R_2 beyond midlength; R_2+3 a little shorter than the deflection of R_4+5 ; $r-m$ about one-half m ; cell 1st M_2 long-rectangular, about equal to vein Cu_1 beyond it; petiole of cell M_1 a little more than one-half the length of the cell; basal deflection of Cu_1 at from two-fifths to one-half the length of cell 1st M_2 .

Abdomen brown, dusted with light gray, especially the sternites; hypopygium light yellow. Male hypopygium with the outer pleural appendage leg-shaped, the foot split into two subequal, parallel points; inner pleural appendage slender, suddenly constricted at about three-fifths the length, the apex cylindrical.

Habitat.—New Zealand.

Holotype, ♂, Wellington, June, 1895 (G. V. Hudson).

Gynoplistia sackeni is presumably the species mentioned by Hutton (Trans. New Zealand Inst., vol. 32, p. 46, 1900) as a variety of *G. wakefieldi* Westwood in which the flagellar pectinations are unusually elongate; the antennæ are but 17 segmented, however, and this latter may pertain to still another species. It is clear that several species are confused under the names of *G. subfasciata* Walker and *G. wakefieldi* Westwood, the number and degree of pectination of the flagellar segments being far too great to fall within the definitions of the above species.

***Gynoplistia fimbriata*, new species.**

Generally similar to *G. sackeni*; wings with the spot at origin of Rs small; wing-tip evenly darkened; cell 1st M_2 small, subquadrate; male hypopygium with the outer pleural appendage profoundly branched, the inner branch very long and sinuous, the tip acute.

Male.—Length about 14 mm.; wing, 11.5 mm.

Rostrum and palpi reddish brown. Antennæ with the scapal

segments reddish brown; the flagellum broken. Head dull gray, lighter gray on the anterior part of the vertex and adjoining the inner margins of the eyes.

Mesonotal praescutum reddish brown, with four indistinct dark stripes that are almost confluent behind; scutal lobes largely dark; scutellum reddish; postnotum gray. Pleura reddish, heavily light gray pruinose, the mesosternum darker. Halteres brown. Legs with the coxæ reddish, light gray pruinose; trochanters obscure yellow; femora brown, more yellowish basally; a conspicuous yellow ring before the subequal brown apex which is slightly enlarged, especially that of the hind legs; remainder of the legs yellowish brown, the tips of the tibiæ narrowly dark brown, the distal tarsal segments dark brown. Wings subhyaline, the costal cell concolorous, the subcostal cell slightly more yellowish; wing-tip strongly darkened, this including about the distal third of cells R_2 , R_3 , R_5 and 2nd M_2 ; the outer two-thirds of M_1 ; a small, dark brown spot at the origin of R_s ; stigma dark brown, sending a conspicuous, narrow seam along the cord; outer end of cell 1st M_2 and vein Cu_2 likewise seamed with brown, the latter suffusing most of cell Cu_1 ; veins dark brown. Venation: R_s rather strongly angulated at origin; r at the tip of R_1 and on R_2 beyond midlength; R_2 comparatively short and oblique so cell R_2 is very wide at the wing-margin; deflection of R_4+5 gently arcuated, about one-half longer than R_2+3 ; cell 1st M_2 very small, only a little longer than wide, about as long as the petiole of cell M_1 , the latter about one-half as long as the cell; the basal deflection of M_1+2 is about two-thirds of the second section of this vein (anterior margin of cell 1st M_2); basal deflection of Cu_1 beyond midlength of cell 1st M_2 .

Abdomen reddish brown, without distinct darker markings. Male hypopygium of the general type of *G. sackeni* but with the pleural appendages remarkably distinct; the outer appendage split into two branches that are divergent, the caudal branch almost straight, shorter than the base of the appendage, the apex obtuse and blackened; the cephalic or inner arm is nearly twice the length of the base of the appendage, sinuous,

the apex acute; the inner pleural appendage is constricted just beyond midlength, the long, slender apex blackened at the tip.

Habitat.—New Zealand.

Holotype, ♂, Greymouth (Helms).

The type specimen bears the name here adopted, *Gynoplistia fimbriata*, in Osten Sacken's writing. This species differs remarkably from all other species of the genus known to the writer in the deeply branched pleural appendages of the male hypopygium.

? *Gynoplistia anthracina*, new species.

Coloration shiny black; halteres brown, yellowish basally; wings dusky, with two broad, brown crossbands; valves of the ovipositor very long and slender.

Female.—Length about 5.8 mm.; wing, 6 mm.

Rostrum and palpi black. Antennæ with the first segment black, the second segment slightly more reddish; flagellum broken. Head shiny black, the vertex between the eyes very broad.

Thorax shiny black. Halteres brown, the base of the stem light yellow. Legs with the coxæ black; trochanters obscure brown; remainder of the legs brown, the distal tarsal segments blackened. Wings with a slight dusky tinge, a spot at the wing-base and two broad crossbands darker brown; the basal spot includes the bases of cells *R* and *M*; the basal band begins at the origin of *Rs*, extending from cell *R* and 1st *R*₁ completely across the wing, ending in cell 1st *A*; the outer band lies at and just beyond the cord, completely traversing the wing but slightly interrupted at cell 1st *M*₂ which is slightly of the ground-color; a small brown spot at the fork of *M*₁+₂; veins dark brown. Venation: *Sc*₁ ending a short distance before the fork of *Rs*, *Sc*₂ at its tip; *r* very indistinct, not far from the tip of *R*₁ and on *R*₂ at about one-third its length; *Rs* long; *R*₂+₃ a little shorter than the deflection of *R*₄+₅; cell 1st *M*₂ small, subrectangular; petiole of cell *M*₁ more than one-half the length of this cell; *m* and the outer deflection of *M*₃ subequal; basal deflection of *Cu*₁ beyond midlength of cell 1st *M*₂.

Abdomen black, with a reddish tinge, especially on the sternites. Ovipositor with the valves light horn-color, very long and slender, the tips acute.

Habitat.—New Zealand.

Holotype, ♀, Greymouth (Helms) (from Osten Sacken's collection).

The reference of this interesting fly to *Gynoplistia* is rendered somewhat doubtful since the antennal flagellum of the unique type is lacking. The other details of structure of the fly seem to indicate that this reference is correct. If this insect is not a *Gynoplistia* it will fall in the genus *Limnophila*, s. l.

Austrotipula, new genus.

Frontal prolongation of the head relatively short; nasus stout. Terminal segment of palpi about as long as the basal three segments taken together. Antennæ short, of peculiar structure, 14-segmented; first scapal segment elongate; basal three flagellar segments elongate-oval, tumid, with the verticils comparatively short, sparse and arranged unilaterally; flagellar segments 4 to 12 suddenly narrowed, long and slender, each with about six very long verticils that are as long as four or five of the flagellar segments taken together; these verticils are distributed over the whole length of the segments; terminal segment with the tip suddenly narrowed, the verticils grouped around the base of this tip. Vertex with a small, bifid, vertical tubercle. Wings with *Rs* elongate, longer than *R*₃ alone; vein *R*₂ comparatively short, oblique, with numerous macrotrichia; *R*₃ nearly straight, parallel to *R*₄+₅; cell *M*₁ sessile; *m-cu* present. Male hypopygium of simple structure. Ovipositor with the valves long and pointed, the tergal valves greatly exceeding in length the small sternal valves.

Genotype.—*Pachyrhina hudsoni* Hutton (New Zealand).

This striking crane-fly, the largest as yet discovered in New Zealand, was originally described as a *Tipula* but later referred by Hutton to the genus *Pachyrhina* (*Nephrotoma*) to which it is but distantly allied. From *Tipula* it is readily told by the peculiar antennæ and sessile cell *M*₁. From *Macromastix* it

differs in these same characters, as well as the structure of the ovipositor.

Genus MACROMASTIX Osten Sacken

Macromastix maori, new species.

Nasus lacking; mesonotum brownish buff, the praescutum with four brown stripes; wings cream-colored, with a pale gray pattern that is, in part, ocelliform; a short spur on vein *M*, jutting into cell *M*; abdomen dark brown.

Male.—Length about 15 mm.; wing, 25.5 mm.

Frontal prolongation of head short, brown; nasus lacking; palpi brown. Antennæ with the first scapal segment grayish brown; second pale; flagellum broken. Head bright brown, narrowly paler adjoining the inner margins of the eyes.

Mesonotal praescutum brownish buff with four brown stripes, the interspaces with long, erect hairs; scutum brownish buff, the centers of the lobes dark; scutellum and postnotum brownish testaceous, the latter with a capillary pale line. Pleura light brown; a conspicuous white stripe extends obliquely across the lateral sclerites of the postnotum onto the mesepimera. Halteres pale, the knobs broken. Legs with the coxæ pale brownish buff, clothed with an abundant long pubescence; trochanters pale; remainder of the legs brown, the tarsi darker brown; tips of the femora and tibiæ scarcely darkened; claws simple. Wings cream-colored, the costal and subcostal cells more yellowish; a pale gray, partly ocellate, pattern, arranged as follows: Base of the wing, including the bases of cells *R*, *M*, *Cu* (narrowly) and the *Anal* cells; a spur on *M* into cell *M* at about midlength of the vein, this spur the center of a large, circular mark in cells *R*, *M*, *Cu* and 1st *A*; base of *Rs* with a small solid area; a second, larger, circle centers about cell 1st *M*₂, passing through the ends of the basal cells, the bases of cells 2nd *M*₂, *M*₄ and *Cu*₁, and less distinctly across the bases of cells *R*₃ and *R*₅; conspicuous gray clouds at the ends of veins *M*₁, *M*₂, *M*₃, *Cu*₁, *Cu*₂ and the *Anal* veins; stigma small, brown; veins brown. Venation: *Rs* rather long, about equal to *R*₃; *R*₂ semiatrophied, diverging strongly from

R_3 ; petiole of cell M_1 short, about two-thirds of m ; $m-cu$ punctiform.

Abdomen dark brown, the basal tergite pale brownish buff. Hypopygium simple, the ninth tergite with a deep and very narrow V-shaped notch, the lateral lobes densely covered with coarse, black bristles. Ninth pleurite incomplete; inner pleural appendage shaped as a long, chitinized beak jutting into the ninth tergite, the proximo-caudal face provided with minute, blackened points. Ninth sternite with a narrow and profound, parallel-sided, median notch. Eighth sternite unarmed.

Habitat.—New Zealand.

Holotype, ♂ (from Osten Sacken's collection).

Paratypes, 2 ♂ s, Tisbury, July 10–August 3, 1912 (A. Philpott).

Macromastix zeylandiae, new species.

Antennæ of the male short; mesonotal praescutum light gray, with four narrow, dark brown stripes; wings light gray, stigma brown; second anal cell comparatively broad; abdomen with a broad, dark brown median stripe that practically covers the terminal segments; ninth tergite of the male hypopygium with a deep V-shaped median notch.

Malc.—Length about 10–11 mm.; wing, 13.3–13.5 mm.

Frontal prolongation of head rather long, light bronwish yellow; nasus long and slender; palpi short, dark brown. Antennæ of the male short, the scape brownish yellow, the flagellum dark brown; the antenna is shorter than the combined head and frontal prolongation; flagellar segments oval. Head fulvous, sparsely white pollinose, especially adjoining the inner margins of the eyes.

Mesonotal praescutum light gray, especially behind, the humeral angles narrowly more yellowish, with four narrow, dark brown stripes, the interspaces with short, pale hairs; scutal lobes gray, darker medially; scutellum and postnotum brownish yellow. Pleura pale, with two indistinct, grayish, longitudinal stripes, the surface sparsely pruinose. Halteres light brown, the knobs slightly darker. Legs with the fore coxæ

brownish yellow, more grayish basally, the other coxæ paler; coxæ clothed with rather long, pale hairs; trochanters yellow; femora light brown, the tips broadly dark brown; tibiæ and tarsi brown; posterior metatarsi very long, considerably exceeding the tibiæ. Wings light gray, the costal and subcostal cells indistinctly yellowish; stigma brown; obliterative areas before and beyond the stigma and across the base of cell 1st M_2 ; veins dark brown. Venation: R_s and R_2+3 subequal; R_2 oblique, the outer section in alignment with the base, R_2 subequal to r ; petiole of cell M_1 equal to m ; $m-cu$ short but distinct; cell 2nd A comparatively broad.

Abdomen brownish yellow, the tergites with a broad, dark brown, median stripe that gradually broadens out to cover the entire segments on the outer half of the abdomen; the yellow color is the brightest on the sides of the basal two segments; sternites dark brown, the sides of the basal segments obscure yellow. Male hypopygium small and of simple structure as in the genus. Ninth tergite broad, the caudal margin with a conspicuous V-shaped median notch, the margins of the notch provided with short black bristles; in a paratype, this notch is considerably more rounded but evidently pertains to the same species. Pleural appendages simple, the outer appendage flattened, oval; inner appendage with the cephalic end subtruncate and provided with a comb of rather numerous tiny black spines; the caudal and dorsal surface of this lobe is provided with a row of seven or eight strong black spines that are subequally placed.

Habitat.—New Zealand.

Holotype, ♂, Otago (from Osten Sacken's collection).

Paratopotypes, 1 ♂, 1 Sex?.

This interesting fly is readily told by the short antennæ and coloration. One of the specimens bears the following note in Osten Sacken's writing: "I saw ♂ in Oxford Mus. The forceps is likewise small." The specimen to which this note was affixed was, however, a male, the hypopygium of this species being extremely small and resembling the fleshy ovipositor of the female.

Macromastix dichroithorax, new species.

Male.—Length about 9–9.2 mm.; wing, 12–12.5 mm.

Female.—Length, 8.5–9.5 mm.; wing, 11.5–13 mm.

Generally similar to *M. zeylandiae*, differing as follows:

Size smaller.

Head rich fulvous, light gray adjoining the inner margins of the eyes.

Mesonotum light gray laterally, with three conspicuous fulvous to reddish stripes, the lateral stripes often much darker (brown) than the median stripe, this latter sometimes narrowly divided by a pale line; scutum light gray, the centers of the lobes dark brown, these markings being backward continuations of the lateral praescutal stripes; scutellum and postnotum obscure yellow, the latter darker posteriorly. Pleura clear gray. Legs with the coxæ clear light gray. Wings with *Rs* a little longer; *m-cu* short or punctiform; cell *2nd A* very narrow.

Abdomen with the basal tergites yellowish laterally, brown medially; second tergite broadly brown medially; remaining tergites rich fulvous orange with a narrow, dark brown, median stripe, the lateral margins of the segments broadly buffy gray; sternites dark brown, the caudal margins of the segments narrowly grayish. Male hypopygium differing in several conspicuous details from that of *M. zeylandiae*; ninth tergite wide, the caudal margin with a broad V-shaped median notch; inner pleural appendage with the cephalic end produced into a slender, cylindrical beak that is capped by a single powerful black spine; about twenty-five similar spines on the dorsal and caudal margins of the lobe, mostly arranged in a single row.

Habitat.—New Zealand.

Holotype, ♂, Otago (from Osten Sacken's collection).

Allotopotype, ♀.

Paratopotypes, 8 ♀'s.

NEW SPECIES OF JAPANESE CRANE-FLIES

PART I

(Diptera, Tipulidæ)

BY CHARLES P. ALEXANDER

The following undescribed species of Japanese Tipulidæ were sent to me by Mr. Ryoichi Takahashi, who collected them in the vicinity of Tokyo. I wish to express my thanks to Mr. Takahashi for this and other very valuable crane-fly material. The types are preserved in the collection of the writer.

Genus ERIOPTERA Meigen

Subgenus EMPEDA Osten Sacken

Erioptera (Empeda) japonica, new species.

General coloration gray; antennæ brownish black throughout; wings light gray, the stigma a little darker; Sc_1 unusually long for an *Empeda*; R_2 generally parallel to R_3 ; cell 1st M_2 open.

Female.—Length, 5 mm.; wing, 5.2 mm.

Rostrum and palpi dark brown. Antennæ brownish black throughout. Head light gray.

Pronotum gray. Mesonotum gray, the praescutum with three ill-defined brownish gray stripes, the lateral and anterior margins indistinctly flesh-colored. Pleura light gray pruinose. Halteres light brown, the knobs darker. Legs with the coxæ gray; trochanters light brown; remainder of the legs brown. Wings light gray, the stigma indistinctly darker; veins dark brown; veins with rather long and conspicuous macrotrichia. Venation: Sc_1 ending a little beyond two-thirds the long and nearly straight Rs ; Sc_2 unusually far from the tip of Sc_1 for a member of this subgenus, Sc_1 alone being but little shorter than the deflection of Cu_1 and longer than that section of R_2+3 before r ; r on R_2+3 at about one-third its length; R_2 running generally parallel to R_3 and but little shorter than this vein, so that cell 2nd R_1 at the wing-margin is about equal to cell R_2 ; cell 1st M_2 open; basal deflection of Cu_1 at the fork of M .

Abdomen dark brown. Ovipositor with the valves horn-colored, the tergal valves rather strongly upcurved, the tips acute.

Habitat.—Japan.

Holotype, ♀, Tokyo, December 3, 1919 (R. Takahashi).

Genus *PSILOCONOPA* Zeterstedt

***Psiloconopa verna*, new species.**

General coloration black; lateral margins of the pronotal scutellum and the posterior margin of the mesonotal scutellum yellowish; knobs of the halteres conspicuously bright yellow; wings grayish subhyaline; cell *1st M*₂ open by the atrophy of *m*; abdomen black, the caudal margins of the segments yellow.

Male.—Length, about 3.5 mm.; wing, 4 mm.

Rostrum and palpi black. Antennæ black, the flagellar segments oval. Head black.

Pronotum black, the lateral margins of the scutellum bright yellow. Mesonotum black, sparsely brownish pollinose; posterior margin of the scutellum obscure yellow; postnotum deep black. Pleura black; a tiny yellow spot at the wing-root. Legs entirely black. Halteres black, the base of the stem more brownish, the knobs conspicuously light yellow. Wings grayish subhyaline; veins dark brown. Venation: *Sc* long, *Sc*₁ extending to opposite midlength of *R*₂₊₃; *Sc*₂ far before the tip of *Sc*₁, the latter vein alone being but little shorter than *Rs*; *Rs* long, straight; *R*₂₊₃ short, a little longer than the deflection of *R*₄₊₅; *r* on *R*₂ about its own length beyond the fork of *R*₂₊₃; cell *1st M*₂ open by the atrophy of *m*; basal deflection of *Cu*₁ subsinuous, located at the fork of *M*; fusion of *Cu*₁ and *M*₃ about equal to the basal deflection of the latter; anal veins divergent.

Abdomen black, the posterior margins of the tergites yellow, narrow and less distinct on the basal tergites, very distinct on segments 6 to 8; sternites similar but with the yellow margins very narrow and indistinct; hypopygium small, black.

Holotype, ♂, Tamagawa, Tokyo, Japan, March 20, 1920 (Ryoichi Takahashi).

Genus CLADURA Osten Sacken

Cladura nipponensis, new species.

Head dark gray; antennal flagellum dark brown; legs pale brown, the tips of the femora and tibiæ scarcely darkened; abdomen dark brown; male hypopygium with the pleurites long and slender, nearly twice as long as the small pleural appendage.

Male.—Length, about 5.3–5.5 mm.; wing, 6.5–6.7 mm.

Rostrum and palpi pale brown. Antennæ with the scapal segments pale brown, the long-oval flagellar segments dark brown; flagellum with thirteen segments, the basal fusion-segment composed of two segments, equaling in length the second and third taken together. Head dark gray.

Mesonotum pale yellowish testaceous, the praescutum with three confluent, darker brown stripes. Pleura pale yellowish testaceous. In the paratype the praescutum is not so dark in color. Halteres pale. Legs with the coxæ and trochanters pale; femora brownish yellow, the bases more yellowish, the tips scarcely darker; tibiæ pale brown, the tips narrowly and indistinctly darkened; tarsi dark brown; pubescence of the legs not conspicuous. Wings nearly hyaline, the base and cells *C* and *Sc* more yellowish; veins brown; macrotrichiae on the veins of moderate length only. Venation: Sc_1 ending beyond the fork of R_2+3 , Sc_2 a very little before this fork; r somewhat indistinct; R_2+3 about equal to that section of R_2 before r ; fusion of M_3 and Cu_1 about equal to the outer deflection of M_3 alone; petiole of cell M_1 about equal to the basal deflection of Cu_1 ; 2nd Anal vein ending about opposite the base of Rs .

Abdomen dark brown throughout. Male hypopygium with the pleurites very long, cylindrical, the single pleural appendage only a little more than half the length of the pleurite, slender, tapering gradually to the apex; gonapophyses in the form of slender, chitinized hooks.

Habitat.—Japan.

Holotype, ♂, Tokyo, November 16, 1919 (R. Takahashi).

Allotopotype, ♀, December 9, 1919.

Paratopotype, ♂, November 16, 1919.

Cladura autumnæ, new species.

Head and antennæ yellow; general coloration yellow, the mesonotum without darker markings; femora and tibiæ yellowish, narrowly tipped with dark brown; abdomen obscure yellow, the tergites indistinctly ringed basally with brown; male hypopygium with the pleurites and appendage stout.

Male.—Length, 5.5–6 mm.; wing, 7–8 mm.

Female.—Length, about 6 mm.; wing, 7.8 mm.

Generally similar to *C. nipponensis*, differing as follows:

Larger. Antennæ pale, with long, black verticils, the terminal three or four segments darker. Head obscure yellowish.

Thorax shiny yellow, the mesonotum without distinct darker markings. Legs with the femora and tibiæ yellow, the tips narrowly but conspicuously dark brown; legs clothed with rather conspicuous, semi-erect hairs. Wings subhyaline; veins dark brown, with long, conspicuous macrotrichia. Venation: Sc_2 far before the fork of R_2+3 ; basal deflection of Cu_1 usually at or before the fork of M , the fusion of M_3 and Cu_1 being extensive.

Abdomen obscure yellow, the tergites indistinctly ringed basally with brown. Male hypopygium with the pleurites short and stout, the single pleural appendage very short and stout, the rounded apex densely set with numerous short spinous setæ. Outer gonapophyses shaped like broad, flattened wings, the outer margin fimbriate, the two apophyses together appearing somewhat like a bird in flight.

Habitat.—Japan.

Holotype, ♂, Meguro, Tokyo, October 22, 1919 (R. Takahashi).

Allotopotype, ♀.

Paratopotype, ♂.

This species is also very close to *Crypteria japonica* Alex., which is very probably likewise a *Cladura*. This latter species is still known only from the type females and the male will be necessary to secure an exact definition of the characters. *C. japonica* (Alex.) has the wings distinctly although faintly tinged with yellowish; the macrotrichia on the veins are shorter

and relatively inconspicuous; Sc_2 is almost opposite the fork of R_2+3 ; cell 1st M_2 broader and the basal deflection of M_1+2 consequently longer; basal deflection of Cu_1 some distance beyond the fork of M as in *C. nipponensis*. In both *C. autumnæ* and *C. japonica*, the second anal vein adds between one-fourth and one-half the length of the long sector.

Genus TIPULA Linnaeus

Tipula tokionis, new species.

Female.—Length, 25 mm.; wing, 20.5–21.5 mm.

Superficially very similar to *T. saitamae* Alexander (Japan) from which it differs as follows:

Head much darker brownish gray. Pronotum not yellow but distinctly suffused with brown. Mesonotal praescutum without the grayish cast in *T. saitamae*. Legs with the tips of the femora and tibiæ narrowly but distinctly darkened. Wings with the ground-color more grayish than yellowish. Abdominal tergites with a broad, blackish sublateral stripe on either side. Ovipositor with the tergal valves slender, almost straight; sternal valves very broad and compressed, the tips evenly rounded.

Habitat.—Japan.

Holotype, ♀, Tokyo, September 15, 1919 (R. Takahashi).

Paratopotype, ♀, August 16, 1919.

A NOTE ON AEDES NIPHADOPSIS DYAR & KNAB

(Diptera, Culicidæ)

By HARRISON G. DYAR

This species was described (Ins. Ins. Mens., v, 166, 1918) from specimens taken in Salt Lake County, Utah, by Prof. C. T. Vorhies, only the female being made known. Through information kindly supplied by Prof. Vorhies, I was enabled to locate the breeding places of the species. The larvæ occurred most numerous in a railroad ditch-pool full of short stems of last season's grass near the hot springs to the northwest of Salt Lake City. The water in the pool was salt and bitter from minerals in the spring.

Male. The palpi have the white scales predominating on the shaft, the hairs of the last joints black. Abdomen marked as in the female, with broad white basal bands, generally indented centrally and with an apical triangle of pale scales, often wholly pale dorsally with paired black spots. Wings with the scales sparser than in the female, black, but showing many white ones in the costal region.

Hypopygium. Side pieces conical, about three times as long as wide; apical lobe nearly bare, with only a few very small setæ, which are turned outward, away from the face of the lobe; basal lobe flat, a long slender spine on the margin, accompanied by three or four setæ about as long as it; the remainder of the lobe, which is rather large, bears very short setæ from slight tubercular bases. Claspette rather long, the filament long, sickle-shaped, a little expanded at tip and longer than the stem. Tenth sternites normal. Ninth tergites with about ten stout spines.

Larva. Head rounded, about as wide as long, darkly infuscated; antennæ uniform, rather small, dark brown, the tuft a little beyond the middle; head hairs single, occasionally double, the upper pair in one specimen triple. Air-tube about two-and-a-half times as long as wide, dark brown, the 5- to 7-haired tuft arising before the middle; pecten generally of few teeth (9), variable, the terminal tooth often detached, but as often not, frequently differing on the two sides of the same specimen. Anal segment with the dorsal plate reaching the middle of the sides at the farthest, irregularly edged and narrower behind. Lateral comb of the eighth segment of about twelve large scales in two irregular rows, each scale with long central thorn and stout short lateral spinules.

The species seems a good one, allied to *impiger* Walker (*decticus* H., D. & K.) and *prodotes* Dyar. It is nearest to the former, but has adopted a desert dress as befits the open nature of its habitat, the plains about the Great Salt Lake being wholly devoid of any vegetation more than a foot high, except, of course, as modified by cultivation.

The mating habits have not been observed.

THE GRABHAMIA GROUP OF PSOROPHORA

(Diptera, Culicidæ)

BY HARRISON G. DYAR

The species of *Psorophora* with simple claws in the female comprise the *Grabhamia* group. Were it not for a single species, this group could be recognized as a subgenus on characters of the male hypopygium. In *Psorophora* proper, the claspette is free and with numerous appendages, well distributed over the tip of the organ. In the subgenus *Janthinosoma* these appendages are all ranged on the inner side, the bare side of the claspette being directed toward the side-piece. In *Grabhamia* the appendages are reduced and the outer or bare side of the claspette has become united to the side-piece, the appendages appearing like a basal lobe thereof. Unfortunately the single species *cyanescens* Coq. has toothed claws in the female adult and is therefore a *Janthinosoma*, whereas the male hypopygium has the structure of *Grabhamia*, the claspette being fused to the side-piece. On this account it is impossible to recognize *Grabhamia* as a third subgenus of *Psorophora*.

The *Grabhamia* divide into two series, the first with dark scales only on the wings, *cingulatus* Fab., of which *confinnis* Lynch Arrib. and *neoapicalis* Theob. are derivative forms or synonyms, and *infine* D. & K. a distinct derivative species inhabiting Santo Domingo. The second series, with both dark and pale scales on the wings, comprises the *jamaicensis* group and the small insular species, *pygmaea* Theob., *haruspicus* D. & K., and *insularius* D. & K.

Concerning the *jamaicensis* group, I am satisfied that too many names have been recognized in the monograph. The characters of coloration used are individual and inconstant, especially in regard to the width of the white ring on the first hind tarsal joint. In regard to the male hypopygium, while the differences are slight, they are perhaps important. In *jamaicensis* from Jamaica there are but five appendages on the harpago; from Cuba and continental North America, six; from

Mexico, seven, and from Colombia, again, six. On this basis we have the following species:

Psorophora jamaicensis Theobald.

Inhabits the southern tier of the Greater Antilles, Jamaica, Santo Domingo, and Porto Rico. The larva has the head-hairs numerous, pecten of the air-tube very short, lateral comb of six scales.

Psorophora columbiae Dyar & Knab.

floridense D. & K., *texanum* D. & K.

Inhabits Cuba, the Bahamas (presumably; I have no male), United States from New York to Florida and Texas. The larva has the upper head-hairs in fives, lower in threes; pecten of the air-tube reaching near the middle; lateral comb with eight scales.

Psorophora toltecum Dyar & Knab.

Southern Mexico. The Texas records in the monograph presumably refer to *columbiae*. The larva has the head-hairs numerous; air-tube with the pecten reaching the middle; lateral comb of six scales.

Psorophora funiculus, new species.

Proboscis with a broad whitish ring. Head and mesonotum with fine brown and silvery scales intermixed, the brown predominating centrally on mesonotum. Abdomen dark-scaled, with large apical segmental triangular white bands. Wing-scales dark and whitish intermixed. Legs brown with whitish scales intermixed, the femora with subapical pale ring; tibiae mottled on the outer side; tarsi with broad basal white rings, the first hind tarsal also with a broad middle pale ring. Claws of female simple.

Types, two males, two females, No. 23088, U. S. Nat. Mus.; Rio Frio, Dept. Magdalena, Colombia, March 4, 1913 (J. H. Egbert).

NEW GENERA OF CHALCID FLIES FROM AUSTRALIA

(Hymenoptera)

By A. A. GIRAULT

Family ENCYRTIDAE

Paracladella, new genus.

Like *Neocladia*, but mandibles long, acute; maxillary palpi with 1, 2 equal, 3 shortest, 4 equal others together, pale with long hairs along its mesal side. Scape thick, flagellum stout, cylindric, club solid; pedicel much smaller than funicle 1, latter a bit longer than wide. Scutellum rimmed at apex. Stigmal long, curved, marginal a bit longer than wide, postmarginal elongate, narrow, twice stigmal. Abdomen globose, ovipositor not free. Palial palp 3-jointed. Robust. Pronotum very short.

Paracladella globosa, new species.

Green, scape red at base; first legs save coxa, femur at base and tarsus, and the second legs, save same and tibia above, reddish. Fore wing with a fuscous spot against stigmal vein. Thorax scaly, with dense short pubescence.

Forest, Nelson, March.

Ecthrobacomyia, new genus.

Like *Ecthrobacca*, but postmarginal absent, three equal acute mandibular teeth, marginal twice longer than wide, twice stigmal. Frons moderate.

Ecthrobacomyia niveipes, new species.

Green, wings clear, veins yellow, legs save coxæ and scape white. Scaly. Funicles 1-4 equal, half wider than long, 5 and 6 quadrate, shorter than pedicel. Clubs subquadrate. Hairless line open to venation and distad. Scutum with minute punctures, scutellum rounded at apex. Wings rather slender, hind, ten lines of discal cilia.

Nelson, with type of *Ufeus quadrifasciatus*.

Family CLEONYMIDAE

Proamotura, new genus.

Like a large *Spalangia*, but head more quadrate, antennæ at middle of face, between prominences on each side, 9-jointed without a ring-joint, club solid. Wings as in *Spalengiomorpha*, but fringes short, discal ciliation abundant, like points; a second (scanty) tuft of black hairs along the stigmal, latter equal postmarginal, marginal long. Pronotum larger than scutum, furrows of latter foveate, axillæ large, meeting, propodeum rugulose, spiracle small, central; abdomen 2 one-fourth of surface, a bit largest, petiole longer than wide. 2.50 mm.

Proamotura aquila, new species.

Red-brown, abdomen save petiole, purple; legs except coxæ, yellow brown; club darker; coxa 3 purplish above; a narrow stripe from first hair-tuft of wing; a wide one, convexed distad, from stigmal and distal one-fifth of marginal. Scape clavate, longest, club next longest, then funicle 1, which is half longer than wide at apex; funicle 4 quadrate; flagellum with long white hairs. Clothing sparse. Curved striæ on pronotum and cephalic scutum.

From beetle-infested twigs of *Mallotus philippinensis*, March 24, 1916 (Hacker), Brisbane.

Entedonastichus, new genus.

Like *Entedonomphale*, but discal cilia of fore wing distinct, postmarginal a bit longer than the short stigmal, paraspidal furrows incomplete, fore wing fringes a fourth wing width. Abdomen apex truncate, ovipositor vertical. Scape moderately widely dilated.

Entedonastichus mirus, new species.

Purple, tibia 1 mostly, tip of 2 widely, tarsi, pale. Wing with wide mid-longitudinal stripe from apex to opposite middle of marginal, thicker from stigmal, reaching nearly from side to side. Pedicel exceeding either funicle; club nippleless, equal rest of flagellum, wider. Mandibles absent?

Irvinebank, forest, March 14, 1919.

Eupelmophotismus, new genus.

Like *Eupelmus* save family characters and: Axillæ more parted, parasidal furrows distinct, scutum plane, antennæ at clypeus, filiform, 11-jointed, club solid, scape greatly dilated; eyes long. Propodeum long, middle carina distinct. Post-marginal nearly half of marginal, longer than the stigmal. Femur 1 swollen, unarmed, 3 same.

Eupelmophotismus eupelmoideus, new species.

2.60 mm. excluding black ovipositor, latter nearly equal abdomen. Purple, wings with a fuscous cross-stripe from base of marginal to apex stigmal; antennæ pale red except first three and club; tarsi, tibial tips, base of tibia 3, trochanters, red. Pedicel equal club, a bit longer than funicle 3, latter three times longer than wide, 1 quadrate, so 7 and 8 but larger. Dorsal thorax punctate.

Stradebroke Island, September 17, 1915 (Hacker).

Eurytomomma, new genus.

Like *Eurytoma* but long like a male Scoliid; pronotum transverse, abdomen conic-ovate, flat above, 2 one-fourth the surface, sessile, others short; antennæ clavate, 13-jointed, no ring-joint, three club-joints. Hind tibial spur stout, single; tibiæ 3 long, clavate, somewhat compressed at apex, above with stiff, short setæ.

Eurytomomma aurifacies, new species.

3 mm. Black, wings clear, legs save coxæ and hind margin pronotum, lemon; face to genal suture, mark along eyes behind and another above on vertex against eye, golden, also more or less of tegulæ. Reticulated. Funicles 1-3 equal, smallest, half wider than long, together subequal pedicel, 4 quadrate, rest widening, 8 largest, twice wider than long. Scutellum with thin median carina at apex.

Forest, Irvinebank, March 14, 1919.

Neostomatoceras, new genus.

Like *Stomatoceras* but abdomen as in *Chalcis*, distal margin wing widely fuscous; antennæ with ring-joint.

Neostomatoceras chalcidiformis, new species.

Black; legs (except first four coxæ, tarsi 3, tibia 1 dorsal centrally, tibia 2 except at each end), abdomen 2 and 3 laterad and ventrad red. A fuscous mark under marginal; apex hind wing faintly dusky. Marginal somewhat longer than post-marginal, latter twice the short stigmal. Scutellum weakly bilobed at apex. Antennæ as in *Chalcis*, with a distinct ring-joint, divisions of the conical club not distinct; funicle 1 somewhat longer than wide, exceeding pedicel. Teeth of femur 3 as in *Stomatoceras*, along distal half. Punctate. Abdomen 2 with distal half above punctulate, nearly all of 3 so, 4 and following with dorsal white hairs from larger punctures. Mandibles bidentate. Femoral furrow cross-striate.

Brisbane (H. Hacker).

Family CHALCIDIDAE

Neochalcissia, new genus.

Male.—Head thin, rounded-triangular, frons with two large, rounded, shallow concavities from eye to eye, divided by a median carina from the cephalic ocellus to the clypeus, the concavities reaching to the antennæ, latter inserted somewhat above middle of face, distinctly above the ends of the ovate eyes which are somewhat longer than the cheeks. Antennæ with scape greatly dilated, a third longer than wide, flagellum clavate, joints short. Stigmal half of marginal, over twice the short postmarginal. Paraspidal furrows complete. Scutellum simple, acute at apex. Hind femur beneath acute for basal four-fifths, there armed with ragged minute teeth, with a curved rugged, large acute tooth at basal three-fifths. Abdomen 2 over third of surface, its hind margin with two obliqued halves. Marginal long.

Neochalcissia magniscapus, new species.

3 mm. Black, wings yellowish, with two distinct fuscous marks, the larger extending half across from near base of submarginal, second along both sides of stigmal. Scape scar-

let, also tibia 1, the tarsi, femur 1 save at basal half, knees, tibia 2 save widely at middle, and trochanters; hind knees black. Scaly, lower face somewhat rugulose. Propodeum with three sharp median and a lateral carina. Clothing sparse. Club 3-jointed, pedicel long, reddish, one half of club.

Deeral, jungle, July.

A NEW NOCTUID FROM OREGON

(*Lepidoptera, Noctuidæ, Acronyctinæ*)

BY HARRISON G. DYAR

Papaipema pertincta, new species.

Area beyond the curved outer line purplish, an ochreous mark before apex, the subterminal line showing as lightened denticulations, all as in *duovata* Bird, except that the color is smoother lustrous purplish; central area light ochreous near the margin, the area above median vein heavily dusted with dark brown; narrow basal area also clear, bounded by the double brown subbasal line; orbicular and claviform spots three, in an oblique line, pale yellow, not white, brown-ringed, the central one the smaller, the upper with an outwardly connected brown center; reniform dots four without, two within, and a central zigzag line, all pale yellow, distinctly larger than in *duovata* and not bicolored. Hind wing dark brownish gray, lighter in the cell, defining a large dark discal lunule. Expanse, 32 mm.

Type, male, No. 22833, U. S. Nat. Mus.; Forest Grove, Oregon, September 5, 1919, bred from *Lupinus polyphyllus* Lindl. (L. P. Rockwood).

NEW SPECIES OF NOTODONTIDÆ FROM
CENTRAL AND SOUTH AMERICA*(Lepidoptera)*

BY W. SCHAUS

Nystalea mocotana, new species.

Male.—Palpi ochereous laterally streaked and irrorated with dark reddish brown. Frons ochereous mottled with brown. Vertex, collar, and thorax dull brown with some ochereous hairs. Abdomen dull brown above; lateral tufts at base; underneath whitish ochre. Legs whitish ochre with lateral reddish brown streaks and spots. Fore wings light brown, darker shaded at base and through cell; streaks of alternate black and ochereous scales at base above subcostal, and below cell; antemedial line defined by a black lunule on costa and below median edged on either side with whitish ochre; a medial double dark brown lunular line partly mottled with pale ochereous scales; a fine black and pale ochereous streak in cell between antemedial and medial lines, and similar scaling on median vein; discocellular spot linear, black and brown, filled in and edged behind with ochreous and white; an elongated pale ochreous shade on costa medially crossed by a dark brown line; a small black shade in end of cell, and a fuscous shade from discocellular spot to termen from vein 5 to vein 7; a narrow dentate fuscous shade curved around cell to middle of inner margin followed by the postmedial which consists of three brownish lines, irregularly lunular with white points on veins 2-7 and a short oblique white line from veins 5 to 4, all of these markings being very confused; an elongated pale ochreous spot on costa from postmedial to apex, reaching below vein 7, and with a short dark streak between veins 7 and 8, and some dark points on costal edge; an indistinct subterminal, lunular, ochreous line from vein 4 to inner margin, above vein 4 forming small spots and across the apical spot a pale straight line; an interrupted velvety, brown black, marginal line, followed by fuscous shades on interspaces of termen; cilia mostly fuscous crossed by ochreous streaks at veins.

Hind wings white, the veins brown; outer margin suffused with brown. Fore wings below brown with whitish streaks on postmedial interspaces; costa narrowly white spotted with brown on outer half except at termen; termen whitish ochre irrorated with brown, sharply defined by the dark edging of brown space. Hind wings below white, the costa yellowish white; some narrow brown shading before termen.

Expanse, 56 mm.

Habitat.—Mocoton, Venezuela.

Type.—Cat. No. 23589, U. S. Nat. Mus.

Near *Nystalea marmorea* Schaus.

***Nystalea postpuncta*, new species.**

Male.—Palpi, head, and collar dark brown. Thorax whitish gray. Abdomen dorsally brownish gray with fine paler segmental lines; underneath pale ochreous. The tufts on fore tibiæ brown mottled with ochreous and with a small white spot. Fore wings whitish irrorated with pale brown, the terminal spaces suffused with pale brown; some irregular fuscous markings; antemedial double dark lines, almost subbasal, out-curved on costa and below cell, interrupted on subcostal by short incurved lines, followed in cell by a fine horizontal line, and by dark points on median, submedian fold, and vein 1; a triple medial transverse line, the proximal line inangled in cell, joining the cellular streak, indistinct below cell; the middle line interrupted on veins, the distal line thicker, sinuous from costa to vein 2, then inbent and lunular; some ochreous shading in places between these lines; veins 2-7 from medial to postmedial line black; an irregular brown spot on discocellular, darker edged behind; postmedial line double, dark brown, gently curved, not reaching inner margin, followed by double black and white points on veins, and a round black spot between veins 4 and 5; a subterminal very irregular and interrupted velvety black-brown line; marginal fuscous spots on interspaces; cilia gray with paired black spots at veins. Hind wings: base, cell, postmedial space from vein 2 to costa whitish, the veins brown, otherwise dull grayish brown. Fore wings below grayish brown, darkest on terminal third, the

costa whitish. Hind wings below white with terminal streaks on veins and marginal light brown shading.

Expanse, 42 mm.

Habitat.—Cayuga, Guatemala.

Type.—Cat. No. 23590, U. S. Nat. Mus.

Pseudantiora laurena, new species.

Male.—Palpi dark reddish brown irrorated with ochreous, the second and third joints shaded in front with steel gray. Frons and vertex dark brown with lateral grayish hairs, the crest on vertex outwardly gray, inwardly dark brown. Thorax fuscous, the collar and patagia whitish gray mottled with brown hairs and with a small dark spot outwardly on collar. Abdomen above dull grayish brown, the anal hairs paler and grayer; pale ochreous tufts at base subdorsally. Body below pale ochreous; legs ochreous mottled with brown; tarsi dark brown outwardly with whitish rings. Fore wings white with brown irrorations; a pale greenish shade at base of costa, in cell above median and above vein 1; inner margin below vein 1 from antemedial to medial line fuscous brown, on costa between same lines light brown; antemedial line broken, forming a fuscous brown spot on costa, a spot on subcostal, one below median followed by a second spot, and a small spot at vein 1 followed by an upright curved line; three dark points on antemedial space in cell, and two below median; medial line double, dark brown, gently curved, interrupted below cell and inset, preceded in cell anteriorly and above vein 1 by fuscous brown spots; a clear white shade on discocellular with a brown point at middle; a double brown line from vein 2 to inner margin, slightly outset from medial line; a fine brown line close beyond cell consisting of outcurved lunules from costa to vein 5, and of incurved lunules from vein 5 to inner margin, the two lunules above inner margin thicker; a double postmedial line of incurved lunules from costa to vein 5, below which they are very indistinct, the outer lunule below vein 4 forming a small spot; apical space tinged with brown; a large black spot subterminally from costa near apex to vein 5; from vein 4 to inner margin a series of smaller black spots; paired

black spots near termen at veins, from vein 3 to vein 2 placed obliquely, at tornus forming a streak; terminal small black spots at veins, suffusing toward apex; cilia with large brown spots at veins. Hind wings with the disc postmedially whitish, the base light brown, the outer margin broadly fuscous brown. Fore wings below dull fuscous brown; costa ochreous; apex whitish. Hind wings below white, the termen broadly dull fuscous brown not reaching anal angle.

Expanse, 35 mm.

Habitat.—St. Laurent, Maroni River, French Guiana.

Type.—Cat. No. 23591, U. S. Nat. Mus.

***Eustema roseilinea*, new species.**

Male.—Body and wings white; a lateral black streak on palpi; tibiæ with fringe of long hairs, roseate on fore tibiæ, white on others; tarsi roseate. Fore wings: a roseate line above median and vein 4 to termen; inner margin and termen tinged with roseate, terminal roseate points; cilia at tornus deep roseate, then paler to vein 4. Fore wings below with the roseate line very faint.

Expanse, 35 mm.

Habitat.—Bolivia.

Type.—Cat. No. 23592, U. S. Nat. Mus.

Presented to me by Dr. W. J. Holland.

***Dicentria hidalgonis*, new species.**

Male.—Palpi and frons mottled ochreous and gray. Vertex gray with a thick black line angled on frons. Collar and thorax dorsally dark brown, laterally gray. Abdomen above ochreous brown; a reddish brown dorsal tuft at base; underneath pale ochreous. Thorax below purplish, the tibiæ hairy; a diamond shape linear brown spot on fore tibiæ; tarsi light brown with black rings. Fore wings pale ochreous; basal half tinged with pale brown; an outbent black streak from base of costa across cell, followed by a reddish downbent line to inner margin; a black streak below cell; subcostal from base and costal margin on medial space lilacine gray limited by a deeply dentate black line from above discocellular to end of areole

and a reddish streak on costa beyond; a double pale brown shade across cell, less distinct on costa and forming a vague shade to inner margin; an ochreous white shade in end of cell; a dark brown line on discocellular and short brown and black streaks on veins 2-6 adjoining cell; ochreous white streaks from cell to termen above veins 4 and 5; a fuscous shade at cell below vein 5; pale brownish shades along veins 4 and 5, and terminally on veins 6 and 7; a black streak between veins 7 and 8 followed by a short white streak; some pale grayish shading between veins 2 and 4; from vein 4 to inner margin faint traces of a double pale brownish postmedial line, inbent below vein 2; cilia of inner margin from middle to tornus and up to vein 3 dark reddish, tipped with black between tornus and vein 2; veins 1-3 terminally black. Hind wings white; costa at apex shaded with gray; inner margin shaded with light brown; cilia at anal angle reddish brown and black. Wings below white; costa of fore wing shaded with gray and ochre; small dark spots toward apex; fuscous streaks between veins 6 and 8; a dark streak on costa of hind wings, the cilia close to anal angle reddish brown.

Expanse, 44 mm.

Habitat.—Hidalgo, Guerrero, Mexico.

Type.—Cat. No. 23593, U. S. Nat. Mus.

Received from Mr. B. Preston Clark.

Near *Dicentria drucei* Schaus, but broader winged and the costal margin darker shaded.

Malocampa obliquata, new species.

Female.—Palpi laterally brown irrorated with white hairs. Frons white. Vertex with ridge of gray and white hairs. Collar and thorax gray mottled with dark brown hairs. Abdomen above gray with fine whitish segmental lines and lateral ochreous white tufts at base; underneath ochreous white. Fore and hind tibiae brown, the latter irrorated with white, fore and hind tarsi fuscous with fine white rings; hind legs whitish. Wings gray, the basal half tinged with pale brown, the terminal space above tornus white, traces of an antemedial dark curved line; a series of points along middle of cell; a fine

medial outcurved brown line from a darker point on costa, edged with black from vein 2 to inner margin, also shaded with moss green at submedian and preceded by a shorter black line; a double black line filled in with brown to vein 2, and with whitish gray below it, closely follows the medial line, and at median is outbent to inner margin; on the proximal side of this double line a wavy black line extends from vein 2 toward the middle of inner margin and on the distal side there is another parallel line from vein 2; these four lines are all inbent on submedian; an interrupted white streak on discocellular with a black point at vein 6; an interrupted postmedial, lunular, black line marked with black streaks on veins, followed by some small brownish spots and a narrow black shade from vein 5 to costa; a subterminal black line crossing below costa a narrow oblique brown shade; an interrupted terminal black line forming in places paired black spots at veins; cilia whitish gray crossed by a dentate brown line. Hind wings gray brown, the base with white scaling; cilia white shaded with brown at base. Fore wings below dark grayish brown; the costa and base of cilia narrowly white; a large white spot at apex. Hind wings below white, the outer margin broadly dark gray brown, produced inwardly below vein 6; cilia white.

Expanse, 38 mm.

Habitat.—British Guiana.

Type in American Museum of Natural History.

Cotype in U. S. National Museum, No. 23594.

Hemipecteros, new genus.

Male.—Antennæ bipectinated on inner side, fasciculate on outer side. Palpi obliquely ascending not reaching above frons, moderately scaled, the third joint short. Fore wings: the outer margin rounded, oblique. Vein 2 well before lower angle of cell; 3 and 4 separate from lower angle; 5 from middle of discocellular; areole long and narrow, vein 6 from middle, 7, 8 from end of areole; 10 from close to end of areole. Hind wings somewhat triangular; costal margin rounded; vein 2 from before lower angle of cell; 3 and 4 separate; 5 from

middle of discocellular; 6 and 7 shortly stalked, 8 diverging at middle of cell.

Type of genus *Hemipecteros arthemis* Schaus.

Hemipecteros arthemis, new species.

Male.—Palpi dark brown above, white below. Frons whitish gray. Vertex gray with a brown line behind. Collar mottled brown and white with a transverse black line. Thorax dorsally fuscous, the patagia gray with some darker hairs and tipped with brown. Abdomen olive gray with brown subdorsal spots on last segment. Body below white; some black brown streaks on tibiæ. Fore wings white; a few gray irrorations at base and an outbent fine black line from base of subcostal to inner margin; antemedial space suffused with gray to antemedial line which is double, gray, inangled on costa, well outcurved in cell and above submedian; medial space with a few gray irrorations; a large dark brown linear spot on discocellular containing some ochreous shading; postmedial double, reddish brown or fuscous from subcostal to vein 4 and vertical, below vein 4, finer fuscous and slightly inbent, followed above vein 4 with fuscous shading which expands at vein 6 and is crossed by black streaks on veins 6 and 7; a marginal lunular black line, preceded and followed by brown irrorations; the space between veins 2 and 3 clear white, also a narrower white space between 3 and 4; terminal dark spots from vein 3 to tornus, extending on to the white cilia; cilia toward apex mottled with brown. Hind wings iridescent white; the veins and inner margin pale ochreous; some brown irrorations at base of cilia and a small fuscous spot at anal angle. Wings below white, apical gray shading below costa of fore wing and a grayish line on discocellular.

Expanse, 40 mm.

Habitat.—British Guiana.

Type in American Museum of Natural History.

Cotype in U. S. National Museum, No. 23595.

This species is very similar in maculation to *Malocampa gastriva* Schaus, but is much paler. *M. gastriva* could be

placed in this genus temporarily; it differs in having the inner side of antennæ unipectinate, the outer side serrate.

Hemiptereros watsoni, new species.

Male.—Palpi dark brown fringed with white in front. Frons white with some brown shading behind palpi. Vertex white crossed by an angled fine black line. Collar white shaded with dark brown dorsally and in front. Thorax thickly mottled with brown, black, and a few white hairs, the patagia white with a few dark hairs and dark tips. Abdomen above brownish gray, the last two segments whitish gray. Body below white; the tibiae mottled with fuscous, the tarsi with brown rings. Fore wings dark brown, the base and termen white; basal space narrow with a fine yellow streak below cell, followed by a vertical fuscous steel shade and then by a double antemedial lunular fine brown line, also vertical; a narrow whitish lunule on discocellular proximally edged by a fine dark brown line, distally edged by a faint brown line which extends to costa and inner margin. Terminal white space with a few brown irrorationes and inwardly edged by a double black line, incurved from apex to tornus, filled in mostly with fuscous steel; marginal fuscous brown lunules on interspaces; cilia white with brown streaks at veins. Hind wings whitish thickly suffused with fuscous, the veins brown; a terminal brown line; cilia white. Fore wings below white, the anterior half suffused with brown; the veins brown; a terminal brown line. Hind wings below white; a terminal brown line; the veins terminally irrorated with brown.

Expanse, 39 mm.

Habitat.—British Guiana.

Type in American Museum of Natural History.

Cotype in U. S. National Museum, No. 23596.

I take pleasure in naming this species after Mr. Frank E. Watson, of the American Museum.

Hemiptereros dyari, new species.

Male.—Body and fore wings as in *H. watsoni* Schaus; the terminal white space more thickly irrorated with brown; the

marginal line vertical, almost straight from costa to vein 4, then deeply lunular to tornus; the black lines edging terminal space bifurcate on costa and are followed by a vertical brown line from vein 6 to vein 8. Hind wings white; a few brown irrorations on veins; some brownish shading above anal angle; a terminal brown line. Fore wings below brown; the costa medially finely white; the inner margin broadly white. Hind wings below white; a fine terminal brown line, somewhat thicker at anal angle.

Expanse, 44 mm.

Habitat.—San Esteban Valley, Venezuela.

Type.—Cat. No. 23597, U. S. Nat. Mus.

Presented to the Museum by Dr. H. G. Dyar.

***Magava forensis*, new species.**

Male.—Palpi with a black streak above, laterally dark brown, in front white irrorated with brown. Frons white with a few brown irrorations. Vertex mottled dark brown and white. Collar and thorax dark brown, outwardly edged with white irrorated with brown and black; a whitish spot on thorax behind. Abdomen above dark brown, the terminal segments whitish gray; underneath yellowish white. Legs shaded with brown, the hind tibiae with broad brown fringe; tarsi with brown rings. Fore wings white finely irrorated with light brown; base dark ochreous gray limited by a double black line outbent from costa to inner margin; a fine medial black line preceded by a small black spot on costa, faintly incurved from costa to within cell at median vein, then incurved and outbent to near vein 1, vertical to it, and outbent and outangled on inner margin; a faint whitish line on discocellular marked by a small brown spot; an inbent fuscous streak on costa above discocellular, from which a faint brownish line is outangled on costa, and then almost vertical to inner margin; postmedial line double, black, filled in with white from vein 8, slightly incurved to vein 2, then single and outcurved to tornus, followed on vein 2 and submedian fold by short black streaks, and above vein 2 by a diffuse brown shade to costa; a marginal black line straight from costa to vein 4, then inset and oblique on each

interspace; cilia white partly mottled with brown. Hind wings dark brown, cilia tipped with white. Wings below brown; edge of costa of fore wing white, with brown points toward apex, cilia mostly tipped with white.

Expanse, 47 mm.

Habitat.—Cayuga, Guatemala.

Type.—Cat. No. 23598, U. S. Nat. Mus.

Fore wings like *Magava marginata* Schaus = *Rifargia incurvata* Jones.

Chadisra larca, new species.

Male.—Palpi mottled brown and white, a velvety black line behind. Head lilacine brown, the vertex crossed by a wavy whitish line in front. Collar somewhat darker with a fuscous spot in front medially, and edged behind with fuscous brown. Thorax lilacine brown, the patagia white with a few dark irrorations. Abdomen above grayish brown fringed with pale reddish brown dorsally at base, the last two segments whitish with some dark irrorations; underneath luteous white, the anal tufts tipped with dark brown. Thorax below and legs mottled light brown and white; tarsi fuscous brown with white rings. Fore wings white irrorated with gray; a large ante-medial dull lilacine brown spot across costa and cell, inwardly edged by an outcurved black line, outwardly by a small black spot above subcostal, and a sinuous black line across cell, this line incurved below cell, then outcurved, only distinct as a black lunule above vein 1; a white line on discocellular edged with gray, above it a small light brown spot on costa, followed by two other small spots, from the first of which a very faint brownish line is outcurved to vein 3, then incurved and lunular to inner margin; from the second spot a faint line is outbent to vein 7, then slightly curved and vertical to vein 4, from vein 6 to vein 4 velvety black, sharply inbent below 4 and very faint to vein 3, then well marked, velvety black, to vein 2, and lunular, interrupted, to inner margin, followed from vein 4 to costa by a lilacine brown shade, widest at vein 5, outwardly marked with black streaks between veins 4 and 8; a similar shade between vein 3 and submedian fold, with a longer black

streak below vein 3; a subterminal clear white line follows along the outer edge of these shades; between veins 3 and 4 there are fewer irrorations; a marginal black line straight from veins 7-6, then deeply lunular to tornus with black spots at tips of veins; cilia white with brown spots at veins except at veins 2-4, where there are paired streaks. Hind wings: base grayish brown with whitish streaks in cell and below veins 3 and 2 near cell; inner margin whitish; termen broadly fuscous, narrowing at anal angle where there is a black spot surmounted by a black line; cilia white. Fore wings below fuscous; a white line on discocellular; costa narrowly white towards apex; termen with white semilunar spots; cilia white with paired brown streaks at veins. Hind wings below white from cell to inner margin; costal margin broadly fuscous, the termen more broadly so, but narrowing at anal angle, the inner edge straight; terminal semilunar spots and cilia white.

Expanse, 37 mm.

Habitat.—St. Laurent, Maroni River, French Guiana.

Type.—Cat. No. 23599, U. S. Nat. Mus.

Close to *Chadisra hymen* Dyar.

Chadisra velha, new species.

Male.—Palpi fuscous brown behind, the second joint fringed with whitish gray. Frons lilacine brown, the vertex darker crossed by a dark brown line in front. Collar brown edged in front and behind with fuscous brown. Thorax brown, posteriorly white, also the patagia and shoulders narrowly with some dark irrorations; the patagia dorsally finely edged with fuscous brown. Abdomen above white with dark irrorations; broad fuscous gray transverse bands on four basal segments; underneath white; the anal hairs below dark brown with lateral paler tufts. Thorax below and tufts on legs lilacine brown, the tarsi fuscous with white rings. Fore wings silvery white thinly irrorated with gray, the inner margin more thickly so; a basal brown spot on costa limited by a fine black line curved to below cell, interrupted on subcostal; a large dark purplish antemedial spot on costa to median vein, outwardly edged by a fine black line which is slightly incurved below cell, then wavily

outbent to middle of inner margin; a dull white line on discocellular, and a small brown spot above it on costal margin; two small postmedial spots on costa from which fine lines are outbent, angled at base of veins 6 and 7, then downbent to vein 4; the inner line is very faint, lunular from vein 4 to inner margin marked by a small black lunule below vein 2, and is followed from vein 2 to inner margin by a brown shade; the outer line from veins 7-4 is fine, velvety black, slightly sinuous, followed by a purplish brown shade outwardly marked with three triangular black spots between veins 5 and 8; a marginal black line, straight from veins 7-4, then lunular to tornus, the lunules with black spots on veins at termen; cilia white with brown spots at veins becoming larger towards apex. Hind wings white, the outer half of costa and termen fuscous, narrowing to a point at anal angle. Fore wings below fuscous gray, somewhat whitish on inner margin and terminally on interspaces below vein 4; an inbent black postmedial line, angled on costa below a small white spot; termen below vein 4 narrowly white. Hind wings below white, the costa and termen to vein 4 fuscous; terminal fuscous streaks on veins from veins 4-2, and a small fuscous spot at anal angle.

Expanse, 39 mm.

Habitat.—Porto Velho, Rio Madeira, Brazil.

Type.—Cat. No. 23600, U. S. Nat. Mus.

Near *Chadisra arecosa* Druce.

Rifargia stellata, new species.

Female.—Palpi yellow brown, streaked with black behind. Head mottled brown and ochreous. Collar dark brown shaded with fuscous behind and with a few pale irrorations. Thorax fuscous behind, in front, also the patagia light brown. Abdomen above brown thickly covered with dark grayish brown hairs and some dorsal spots of cinnamon brown and whitish hairs, the two last segments thickly irrorated with whitish fan-shaped scales. Body below yellow brown. Tibiæ and base of tarsi with fuscous hairs irrorated with whitish, the tarsi otherwise outwardly black with white rings. Fore wings dark

brown, between veins 2 and 4, and 5 and 6 light brown; veins black irrorated with white; inner margin thickly irrorated with white; traces of small antemedial pale spots; discocellular spot large, projecting in front towards base, irrorated with yellowish scales, edged with black and white scales; from veins 4-6 the space beyond cell to subterminal line is shaded with purple black; postmedial line very fine, black, consisting of lunules on interspaces, vertical from costa to vein 3 then inbent; white points on terminal half of costa; a white spot at apex from which a fine white line is downbent to vein 5; a wavy terminal black line with white points on either side at middle of interspaces; cilia brown with white streaks at veins, and partly tipped with white. Hind wings dark brown, the cilia ochreous tipped with white; an irregular terminal black line at anal angle. Fore wings below dull dark brown; costa medially yellowish followed by white points to apex; termen and cilia ochreous white, the marginal line interrupted and marked by dark spots on interspaces. Hind wings below dull dark brown; base of cell and a broad space below cell deep yellow; a whitish shade along inner margin; termen narrowly and cilia whitish, the former with some small brown spots.

Expanse, 54 mm.

Habitat.—British Guiana.

Type in American Museum of Natural History.

Cotype in U. S. National Museum, No. 23661.

Lobeza obliquilinea, new species.

Male.—Palpi brown at base, white terminally. Frons white. Vertex, collar, and thorax light gray; some black markings on thorax behind. Abdomen above yellow brown, underneath white. Thorax below white; throat fuscous; fore tibiæ white mottled with black and ochreous; a few dark scales on tarsi. Fore wings white irrorated with brown, more heavily on basal space, which is limited by a double brown antemedial line outbent to middle of inner margin, the proximal line from subcostal vein; a subbasal black point below cell and an upright shade on inner margin; the discocellular white line defined by

brown irrorations which form also an inbent line beyond cell from veins 7-5, and a second line inbent from costa to inner margin, very indistinct below vein 4; a subterminal wavy clear white line, preceded by darker shading from vein 5 to costa; some vague terminal brown spots; cilia white with brown spots on interspaces. Hind wings fuscous gray, the inner margin broadly tinged with brown; veins dark brown; cilia white. Fore wings below and cilia white; costal and inner margin broadly shaded with pale grayish brown; base of wing brownish. Hind wings and cilia below white; a faint brown tinge on inner margin; base of wing brownish.

Expanse, 50 mm.

Habitat.—Omai, British Guiana.

Type.—Cat. No. 23602, U. S. Nat. Mus.

Anita essequeba, new species.

Female.—Palpi whitish streaked behind with dark brown. Frons yellow brown. Vertex light brown. Collar and thorax dark brown mottled with gray hairs; patagia and shoulders white mottled with dark brown hairs. Abdomen above dark brownish gray. Body below pale yellowish brown, the legs whitish gray; tarsi fuscous with white rings. Fore wings: base broadly pale yellow brown, its outer edge irregular marked by a dark brown spot on costa, one on inner margin and with dark streaks in and below cell; medial space on costa and in cell whitish, crossed by a dark brown lunular line, preceded from cell to inner margin by a similar line; below cell this line edges the basal space; following the line below cell to inner margin the wing is shaded with brown; discocellular spot linear, brown, filled in with gray and white, and is closely followed by a deeply dentate fuscous line from subcostal to inner margin; on costa this line is brownish; postmedial line fine, brown, lunular, outwardly edged with white in places, and with light brown from vein 3 to inner margin, and is followed throughout by long black streaks on veins, also a fuscous shade from vein 4 to inner margin; terminal third of wing light brown from inner margin to vein 4, and whitish irrorated

with brown from vein 4 to costa; a wavy, submarginal black line inwardly edged with whitish, and preceded by a dentate black line from costa to vein 5; a terminal brown line with white points on veins; cilia light brown with whitish streaks at veins. Hind wings dull dark gray brown, the cilia tipped with white. Wings below dark grayish brown; fore wings with a dark brown streak on costa postmedially, beyond which the costa is narrowly white with brown points, expanding slightly at apex; inner margin of hind wing whitish.

Expanse, 41 mm.

Habitat.—British Guiana.

Type in American Museum of Natural History.

Cotype in U. S. National Museum, No. 23603.

Very close to *Anita galibensis* Schaus = *A. basiplaga* Rothschild.

NOTES ON HELLEN'S "BEITRÄGE ZUR KENNTNIS DER ICHNEUMONIDEN FINLANDS: SUBFAMILIE PIMPLINÆ"

BY R. A. CUSHMAN AND S. A. ROHWER

Dr. A. Roman has just called to our attention a paper published in 1915¹ in which is proposed a new arrangement for the ichneumon-flies of the subfamily Ichneumoninæ (Pimplinæ) and which we overlooked in our review of the literature dealing with the classification of this group published as an introduction of our tribal classification.² We regret that this paper was unknown to us, and since it contains new ideas and may be overlooked by other students we desire to call attention to and compare it with the arrangement suggested by ourselves.

Hellén is the first to depart materially from the Ashmead

¹ Hellén, Wölter—Beiträge zur Kenntnis der Ichneumoniden Finlands. I. Subfamilie Pimplinæ. Acta Societatis pro Fauna et Flora Fennica, vol. 40, No. 6, 1915, pp. 1-89, map.

² Cushman, R. A. and Rohwer, S. A.—Holarctic Tribes of the Ichneumon-flies of the Subfamily Ichneumoninæ (Pimplinæ), Proc. U. S. Nat. Mus., vol. 57, pp. 379-396, 1920.

arrangement of this subfamily, and some of his new groups agree quite closely with those proposed by us. His employment of the subtribe to express the closer relationship of certain groups is commendable, though in our opinion not always soundly applied. It is to be regretted that he did not see fit to employ the usual tribal and subtribal endings of *-ini* and *-ina*, especially the latter, since all other authors have followed Thomson in this.

The tribal key shows a somewhat new arrangement and includes the two new tribes Xylonomides and Schizopygides. But it is inadequate in that the same old difficulty in placing males is perpetuated—for instance one wonders how he is to keep the males of *Perithous*, as well as of certain other genera, out of the Lissonotides or Acoenitides. The descriptions of the tribes make the distinction very little clearer.

The division of the old tribe Xoridini (with *Echthrus* relegated to the Cryptinæ) into two parts is most interesting, both because of the character used and because it is so different from the separation adopted by us. The separation of *Xorides* and *Xylonomus* is, although we have maintained them in the same tribe, perhaps justified; they are certainly very distinct. But in placing *Xorides* and *Poemenia* (we do not know *Tropistes*) in the Rhyssini Hellén has simply transferred genera that were more or less anomalous in their former placing to another group where they are still more anomalous. We cannot agree that *Poemenia* is more closely allied to *Xorides* than to *Xylonomus*, and we do believe that *Odontomerus* and *Ischnocerus* (together with the American *Aplomerus*), while related to *Xylonomus*, are worthy of tribal, or at least subtribal, rank. In his use of the subtribal division Hellén is not consistent, having carried it too far in the Pimplides and not far enough in other tribes. His separation of the Ephialtini and Epiurini is especially weak and not justified by facts. On the contrary it is difficult to tell where (*Ephialtes*) = *Ichneumon* stops and *Scambus*, of which *Epiurus* is only a subgenus, begins; and certainly these two genera are more closely allied than are *Ichneumon* and *Perithous*. The last named genus is

fully as distinct as is *Delomerista*. Certainly the Ephialtini and Epiurini are not of coordinate value with Phytodiaetini, which we believe is worthy of at least tribal rank if it should not actually be excluded from the subfamily. The subtribe Lampronotini is entirely misplaced by Hellén. In the majority of its characters it is obviously more closely related to the Lissonotides than to the Pimplides. Since so much stress is laid on the strongly developed hypopygidium in this case, one wonders why it was not carried to the logical conclusion and a tribe made for *Clistopyga*.

In our paper we have expressed the opinion that *Schizopyga* is Exochine, but it does have much in common with the Pimplinæ as well as with the Tryphoninæ and is perhaps better referred to the Pimplinæ.

There is no doubt that Hellén is correct in considering *Glypta* and *Lissonota* closely related, but the difference in abdominal structure we believe worthy of recognition by a group name.

It is interesting to note that Hellén credits the genus *Ephialtes* to Schrank while still adhering to the Gravenhorstian interpretation of the genus.

The glossary of terms employed is very useful for the beginner.

The above remarks, while they may appear unduly critical, are not intended to be faultfinding and were it not for the fact that we believe we have, in our synopsis, offered more reliable characters we should certainly hesitate to comment on this very useful and original contribution. Indeed when we consider that the author is dealing with a limited fauna we feel that he should be congratulated, and we trust that he will continue his investigations in the same open-minded way, and not be blinded and bound by previous classifications.

To show more clearly the similarity and dissimilarity between the arrangement proposed by Hellén and that suggested by ourselves the following "skeleton" of his classification is given and on the right hand side of the page, in black face type, the equivalent groups in our synopsis:

Subfamily Pimplininae =		Ichneumoninae
Tribe Xylomonides		
Genus (<i>Xylonomus</i>) = Xorides		} Xoridini in part.
<i>Odontomerus</i>		
=		
<i>Ischnoceros</i>		} Odontomerini.
Tribe Pimplides		
Subtribe Rhyssini		
Genus <i>Rhyssa</i> (and subg. <i>Thalessa</i>)		Rhyssini.
<i>Poemenia</i>		} Xoridini in part.
(<i>Xorides</i>) = Deuteroxorides		
<i>Tropistes</i>		Not placed.
Subtribe Ephialtini		
Genus <i>Perithous</i>		} Ichneumonini in part.
(<i>Ephialtes</i>) = Ichneumon		
Subtribe Epiurini		
Genus <i>Epiurus</i>		
<i>Zaglypta</i>		
<i>Iseropus</i>		
<i>Tromatobia</i>		
Subtribe Pimplini		Ephialtini.
Genus (<i>Pimpla</i>) = Ephialtes		
<i>Apechtis</i>		
<i>Itoplectis</i>		
Subtribe Polysphinctini		
Genus <i>Clistopyga</i>		Ichneumonini in part.
<i>Polyshpincta</i> (two subg.)		} Polyshpinctini.
<i>Colpomeria</i>		
<i>Acrodactyla</i>		
Subtribe Lampronotini		Lissonotini in part.
Genus (<i>Lampronota</i>) = Cylloceria		
Subtribe Delomeristini		Ichneumonini in part.
Genus <i>Delomerista</i>		
Subtribe Phytodietini		Phytodietini.
Genus <i>Phytodietus</i> (<i>sic!</i>)		
Tribe Schizopygides		Tryphoninae.
Genus <i>Schizopyga</i>		
Tribe Lissonotides		
Genus <i>Teleutæa</i>		} Glyptini.
<i>Glypta</i> (with 4 subg.)		
<i>Lissonota</i>		} Lissonotini in part.
<i>Cryptopimpla</i> (with 2 subg.)		
<i>Meniscus</i> (with 3 subg.)		
<i>Arenetra</i>		
Tribe Acoenitides		Accenitini.
Genus <i>Mesoclistus</i>		
<i>Arotes</i>		
<i>Coleocentrus</i>		

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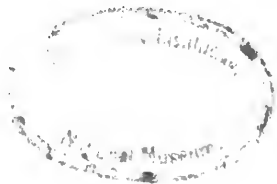
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THE AEDES OF THE MOUNTAINS OF CALIFORNIA AND OREGON

(*Diptera, Culicidae*)

By HARRISON G. DYAR

During the summer of 1920 further observations were made on the peculiar mosquito fauna of the Californian mountains. I have referred to this fauna twice previously (*Ins. Ins. Mens.*, iv, 80-90, 1916; v, 11-21, 1917), but the males of a number of the species remained unknown. These have now been obtained.

The central part of the fauna lies in the Lake Tahoe region. Northward of this two of the species (*cataphylla* and *fisheri*), and possibly a third (*ventrovittis*), drop out; but the fauna extends northward at least as far as the mountainous area about Crater Lake in Oregon.

Aedes (*Heteronycha*) *tahoënsis* Dyar.

This is allied to *lazarensis* Felt & Young, my comparison with *pullatus* Coquillett (*Ins. Ins. Mens.*, v, 11, 1917) being in error, due to a misapprehension of *pullatus* at the time. The coloration of the mesonotum is gray, mixed with brown or yellow-brown, the blackish lines usually distinct, frequently with gray spots on each side. The form should possibly be classified as a race of *lazarensis*, *Aedes lazarensis tahoënsis* Dyar. The coloration is as in the western form of *lazarensis*, which occurs as an occasional variety in the Rocky Mountain region. In *tahoënsis* the normal coloration of *lazarensis* is not seen. In the Alaskan race, *borealis* Ludlow, there is extreme variation, occasionally matching the *tahoënsis* coloration, but

rather as an accident. In the male hypopygium, the spine at the basal lobe of the side piece is slightly more outwardly placed than in *lazarensis*, but the character does not appear equally distinct in all mounts, and is too indefinite for a positive separation. The other male characters are alike. In the larva the upper pair of head hairs show a tendency to be multiple, but subject to the usual variation. I do not consider the character to be necessarily specific, though indicating a racial distinction.

In the high land about Lake Tahoe, where the large open snow-pools occur, the *tahoënsis* adults are large and distinctly marked. Farther to the north, conditions being less favorable, the adults are small, and the dorsal markings more or less confused. The appearance reminds one of *impiger* (*decticus*), but the male hypopygium remains normal. In the high land about Mount Elwell (Feather River region), the species was abundant, but only a few large specimens were seen. At Crater Lake they were small with confused markings, and not abundant, being largely replaced by *masamae*, discussed later. The species thus has its main center about Lake Tahoe, and degenerates northward.

Additional data are as follows: Summit, Placer County, California, June 12-20, 1920 (H. G. Dyar); Tahoe City, California, June 16, 17, 18, 1920 (H. G. Dyar); Gold Lake, Sierra County, California, June 26, 1920 (H. G. Dyar); Camp Elwell, Plumas County, California, June 23-27, 1920 (H. G. Dyar); Crater Lake, Oregon, July 28-30, 1920 (H. G. Dyar).

Males were observed swarming at Camp Elwell, the habits being the same as with *hexodontus*, described later.

***Aedes* (*Heteronycha*) *masamae*, new species or variety.**

Female. Large; mesonotum with dark bronzy brown scales over the anterior portion, the scales about the antescutellar space and the roots of the wings whitish; two blackish stripes, broad in front, narrow and a little curved behind; short side stripes similar, moderate, bent on the lateral suture. Head dark, with small patch of whitish scales on the vertex and larger one on each side. Abdomen black scaled, with narrow

basal segmental white bands, widening on the sides; venter mostly whitish scaled. Legs black, the femora white at base and beneath to tip; tibiæ and first tarsal joint below with many white scales. Wing scales black, those on subcostal, second and fourth veins appearing paler.

Type, female, No. 23832, U. S. Nat. Mus.; Crater Lake, Oregon, July 29, 1920 (H. G. Dyar).

Variation consists in the light scales creeping forward from the ante-scutellar space between the dark stripes, replacing the brown ground. When the light scales surround the disk of mesonotum, the marking of *tahoënsis* appears. It may be that this is a variety of *tahoënsis*, but the normal small form occurs with it, though sparingly. This is the commonest mosquito at Crater Lake. Occasionally the blackish mesonotal stripes are weak or possibly absent. No males were obtained, so the exact standing of the form must await further explorations; but it seems best to call attention to it by description.

I have heretofore referred to *altiusculus* Dyar from Mount Rainier, Washington, as a diminutive form of *tahoënsis*. The mesonotum of *altiusculus* is dark yellow with distinct blackish markings. It is difficult to see how it can be a form of *tahoënsis*, as the evolution of the markings northward follows a different course; but *altiusculus* might be a form of *masamae*.

I have a small series of females from Kaslo, British Columbia, with almost the same markings as *masamae*; but these, as shown by the larvæ, are *punctor*, form *centrotus*, and probably have nothing to do with the present form, which I take to be an ally or variety of *tahoënsis*.

One hundred and eighty-seven females are before me, Crater Lake, Oregon, 8,000 feet, July 28-30, 1920 (H. G. Dyar). Though taken at 8,000 feet, it is evident from the contour of the land that the breeding grounds are from 1,000 to 2,000 feet lower.

***Aedes (Heteronycha) cataphylla* Dyar.**

This species is very close to *prodotes* Dyar, as previously remarked by me (Ins. Ins. Mens., vii, 22, 1919; viii, 23, 1920).

In fact, I think the two are identical, in spite of the geographic discontinuity. The discontinuity seems certain, for I did not take the species in the Feather River region either in 1916 or 1920, nor at Crater Lake in 1920, although it was conspicuous in the Lake Tahoe region. I think the colony in the high Sierras is isolated; but as I cannot demonstrate any differences in coloration, male hypopygium, or larva, I do not think that the form can be separated. The name *cataphylla* is older and will take precedence over *prodotes*.

The larva has four separated and detached teeth on the air-tube beyond the pecten-tuft on one side and two on the other, or three on each side. These detached teeth are evidently somewhat variable in number, but the terminal one is near the end of the tube as in my description of *prodotes* (Ins. Ins. Mens., viii, 10, 1920).

The males swarm over open spaces high up, as I observed for *prodotes* (Ins. Ins. Mens., viii, 10, 1920). At Tahoe Tavern a single male was seen over a path in the woods about 6 p. m. about 10 feet in the air. The sun had not set, but the approaching cool of evening was apparent. Males were also found flying in shaded woods as late as 8.30 a. m., before the sun had penetrated the shadows.

Additional data are as follows: Summit, Placer County, California, issued from pupa, June 17 and 20, 1920 (H. G. Dyar); Tahoe City, California, June 11-20, 1920 (H. G. Dyar).

***Aedes (Heteronycha) hexodontus* Dyar.**

I have given (Ins. Ins. Mens., viii, 26, 1920) reasons for considering this as a distinct species, and not a race of *puncator* Kirby, to which it is closely allied. The mesonotum is yellow or brown, with the blackish bands variable, often absent, but never assuming the single broad median band characteristic of *puncator*. The larvæ occur in very shallow marshy pools, never in the deep open pools favored by *tahoënsis*. The swarming of the males is peculiar. The flight occurs just preceding sunset, for half an hour or more, but ceases as soon as the sun has actually set. The swarms are low down, a foot or

two from the ground, before bushes or the lower part of trees, on the shaded side, but while the sunlight is still streaming through. On two occasions at Camp Elwell the swarming was noted, especially in one case, where the swarm was actually in camp, over a little path cut through low pines. A second flight occurs also early in the morning, continuing in the cool parts of the woods as late as 8.30 a. m.

Additional data are as follows: Tahoe City, California, June 11-20, 1920 (H. G. Dyar); Summit, Placer County, California, June 19-27, 1920 (H. G. Dyar); Gold Lake, Sierra County, California, June 24, 1920 (H. G. Dyar); Lakes Center Camp, Plumas County, California, June 22-29, 1920 (H. G. Dyar); Camp Elwell, Plumas County, California, June 23-July 15, 1920 (H. G. Dyar); Crater Lake, Oregon, July 28-30, 1920 (H. G. Dyar).

Aëdes (Heteronycha) fisheri Dyar.

I stated the opinion (Ins. Ins. Mens., viii, 23, 1920) that *fisheri* represented *intrudens* of the Canadian fauna. The discovery of the male shows that the resemblance is superficial, and that *fisheri* is really a distinct species of the *punctor* group. The original locality of *fisheri* being given as "Lake Tahoe," I spent some time searching various places at the 6,000 foot level, which is the level of the lake, but without success. There is no place called "Lake Tahoe," the lake itself being 70 miles in circumference. Later it appeared that *fisheri* does not occur at this level, but 1,000 feet higher, at the 7,000 foot level, as at Summit, Placer County. It is apparent, therefore, that the labels attached by Dr. Fisher were of a general nature only, and that he actually obtained the specimens which became types at a higher level, not improbably in Desolation Valley above Fallen Leaf Lake. Dr. Fisher told me that he took the specimens at Tahoe Tavern (Ins. Ins. Mens., v, 19, 1917); but I feel sure that his memory was at fault in this instance. It is certain that my own collections failed to disclose the species in this locality.

Male. Palpi only slightly exceeding the proboscis, black, with long black hairs on the last two joints. Mesonotum

black, without scales, but with dense black hairs, those posteriorly as well as on the fore coxæ long. Abdomen entirely black above and below, densely hairy. Legs black, bronzy brown below. Wing scales black.

Hypopygium. Side pieces three times as long as wide, conical at tips. Apical lobe elliptical, not strongly elevated, clothed with stout recurved clinging hairs. Basal lobe tubercularly expanded, clothed with short strong curved setæ, becoming longer at the inner angle, where in a dense tuft is a single slender spine with curved tip. Claspette slender, moderate, the filament short, thick, curved and sickle-shaped. Ninth tergites moderate, with three long and two shorter spines at tip.

Female. Head and mesonotum normally scaled, without long hairs, which are absent also on the front coxæ. The vestiture of the mesonotum is coarse, and uniformly dark bronzy brown.

Larva. Head dark brown, the hairs single; ante-antennal tuft in six. Lateral comb of the eighth segment of about seven scales in an irregular row, each scale smooth and with long central spine. Air-tube about three times as long as wide or less, conical; pecten of about nine teeth, followed by one or two widely detached ones and a hair-tuft. Anal segment with broad dorsal saddle distinctly separated on ventral line, although nearly touching; tufts preceding the ventral brush running half way to base. Anal gills long, four.

The larvæ frequent flat shallow pools, occurring in one case in a small drainage pool about 2 feet in diameter in a grassy meadow, and again in shallow pools in grass, being very large pools formed by the high water of a small lake. In both cases *hexodontus* larvæ occurred with them, and in the second instance *palustris* larvæ also.

Additional data are as follows: Summit, Placer County, California, issued from pupæ, June 18, 19, 21, 22, 1920 (H. G. Dyar).

***Aedes (Heteronycha) increpitus* Dyar.**

Additional data are as follows: Tahoe City, California, June 12-20, 1920 (H. G. Dyar).

The males were observed swarming on a hillside overlooking the lake, in forest, about the edges of *Ceanothus* bushes. The flight occurred just after sunset, when it was just becoming difficult to see clearly in the shade of the bushes, although the sun was still shining on distant hilltops. This represents about the normal time of swarming, and not unusually early, as with the other Californian species.

***Aedes (Heteronycha) palustris* Dyar.**

I have shown that this may be considered as a race of *fitchii* Felt and Young (Ins. Ins. Mens., viii, 117, 1920), *Aedes fitchii palustris* Dyar.

Additional data are as follows: Tahoe City, California, June 14, 17, 1920 (H. G. Dyar); Truckee, California, June 21, 1920 (H. G. Dyar); Summit, Placer County, California, June 10, 24, 29, 1920 (H. G. Dyar); Lakes Center Camp, Plumas County, California, July 1, 3, 1920 (H. G. Dyar); Camp Elwell, Plumas County, California, June 24, 27, 1920 (H. G. Dyar); Crater Lake, Oregon, July 28-30, 1920 (H. G. Dyar).

The Crater Lake specimens are all females, some large; but as they all have many white scales on the wings and much gray on the sides of the mesonotum, I have classed them as *palustris*. The Crater Lake fauna has peculiarities of its own, as remarked above under *masamae*, and further investigation of the *palustris* would undoubtedly prove of interest.

***Aedes (Taeniorhynchus) varipalpus* Coquillett.**

Additional data are as follows: Dunsmuir California, August 1, 1920 (H. G. Dyar); Hoodspott, Washington, July 6, 7, 1920 (H. G. Dyar); Lake Cushman, Washington, July 3, 4, 1920 (H. G. Dyar); Okanogan, Washington, July 19, 1920 (H. G. Dyar); Mission City, British Columbia, July 14, 1920 (H. G. Dyar).

***Aedes (Ecculex) vexans* Meigen.**

No additional specimens of this species were taken in the mountains proper. It appertains to the lower levels, being one of the commonest flood-pool species of river valleys.

***Aedes (Aedes) cinereus* Meigen.**

Additional data are as follows: Lakes Center Camp, Plumas County, California, issued from pupæ, June 30 and July 1, 1920 (H. G. Dyar).

These larvæ, the only ones found, occurred in some ditch-pools which dried out the following day, several days before pupation, so that if these larvæ had not been collected, they would all have perished. The altitude is 6,200 feet; previous records being Fallen Leaf Lake, 6,100 feet, and Yosemite Valley, 4,000 feet.

The larvæ were associated with *hexodontus*, the latter being in the pupa stage, and probably emerged in part before the pools went dry.

***Aedes (Aedes) ventrovittis* Dyar.**

The discovery of the male gives the unexpected result that this is an ally of *Aedes cinereus* Meigen.

Male. Palpi short, about one-eighth as long as the proboscis, black; antennæ plumose, black, the rings white on the narrowed part, the last two joints long and slender. Mesonotum with bronzy brown scales and two rather broad bands of black ones running back to near the antescutellar space; posterior side stripes indistinct and narrow. Abdomen black above, with basal, lateral, small, segmental, triangular whitish patches; venter with dull whitish scales, the apices of the segments and mid-ventral line black. Wing scales all black. Legs black scaled, the femora white beneath, their tips narrowly white.

Hypopygium. Side pieces about two and a half times as long as broad, tapering sharply at the tip. Clasper subapical, furcate at the tip, the outer arm the longer, finely tubercular, but without spine; an elliptical process at the base, bearing setæ on outer margin. From the base of the side-piece membrane arise two lobes, divaricate, each with three setæ. Basal angle of side-piece with a large patch of hairs and a small lobe. Tenth sternites narrow, normal. Aedoeagus expanding outwardly, curved, dentate at tip, all exactly as in *cinereus* Meigen.

The dispersal of this species is rapid. On June 13 the females were found in abundance in low land behind Tahoe Tavern, not being in evidence elsewhere. By the 18th, they had practically left this area and were well distributed through the woods several miles distant. It is thought they had recently emerged in the first location, although the marshy ground had dried out.

Additional data are as follows: Tahoe City, Placer County, California, June 12-20, 1920 (H. G. Dyar); Gold Lake, Sierra County, California, June 26, 1920 (H. G. Dyar); Camp Elwell, Plumas County, California, June 23-25, 1920 (H. G. Dyar).

A NEW CULEX FROM PANAMA

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

Culex (Choeroporpa) psatharus, new species.

Male. Head with flat black scales and many erect forked ones; a white border to the eyes below, narrowing above and not attaining vertex. Mesonotum with dark brown narrow curved scales. Abdomen entirely black scaled above and below. Legs bronzy black, the femora paler below. Wings narrow, the scales blackish, ovate, the first submarginal cell very long, about three times its stem. Palpi exceeding the proboscis by more than the length of the last joint, the last two joints slender, sparsely hairy; palpi and proboscis dark brown.

Hypopygium. Side piece very broad at the base, narrowing, slender on the outer third; inner division of the lobe with a large columnar stem, a little constricted in the middle, three oblique transverse ridges forming a broken collar about the tip, appendages equal, very stout, with hooked tips, inserted almost together; outer division of lobe twice cleft almost to base, forming three pedicels, the outer bearing a group of flattened filaments, the middle a blade-like filament, the inner a long hooked filament and a short blade-like one beside it.

Clasper stout, bent, the outer half elliptically thickened and hirsute along the dorsal side, a long groove to tip and a curved one back of it; spine widened and appendiculate. First plate of mesosome with a long spine at base, the tip widened and bilobed, one lobe pointed, the other rounded. Basal hooks broad, long, curled. Ninth tergites broader than long, rounded, setose.

Types, two males, No. 23737, U. S. Nat. Mus.; Colon, Panama, July 28, 1920, taken on the screens of the Colon Hospital (W. S. Chidester, communicated by J. Zetek). Also Colon, Panama, June 21, 1920, taken on screens of Hotel Washington (J. Zetek), in all 31 specimens of both sexes, on the screens at 6 to 7.30 a. m. Collections later in the day (10.35 a. m.) did not yield this species.

NOTE ON *Aedes fulvus* WIEDEMANN

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

The male of this species, missing in the monograph (Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 625, 1917), is now at hand. The coloration agrees with that of the female, as also the short raised scales on the hind tibiæ.

Hypopygium. Side pieces long and slender, over four times as long as wide, slightly curved, rounded at tip; an open tuft of long hairs inwardly at the outer fourth. Clasper slender, with long terminal spine. Apical lobe moderate, running to the base, nude, except for two small setæ at the upper angle. Basal lobe divided, the lower part quadrate, bearing a very long stout spine, swollen in the middle; upper part elliptical, free, finely setose all over, resembling a cactus-leaf. Claspette stem slender, rather long, narrowed slightly on the outer third; filament widely expanded, the expansion broadest at the base, the tip shortly hooked. Tenth sternites moderate, the tips bluntly pointed. Aedoeagus conical, weakly chitimized. Ninth tergites short and broad, oblique on the inner side, each with about ten setæ.

The structure is identical with that of *Aïdes bimaculatus* Coquillett.

The species belongs to the group of the subgenus *Heteronycha* typified by *serratus* Theobald.

The specimens were sent by Mr. J. Zetek, taken on the screens of Colon Hospital, Panama, July 6 and 28, August 11, 1920 (W. S. Chidester).

A COLLECTION OF MOSQUITOES FROM THE PHILIPPINE ISLANDS

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

A collection of 640 mosquitoes was sent me by Prof. C. F. Baker, Dean of the College of Agriculture, Los Baños, Luzon, Philippine Islands. The collection was made by students of the college, mostly in 1915. Thirty-two species are contained in the collection, a large number for a single locality, but probably by no means exhaustive. A recognition table of these species is added for the convenience of the college.

SABETHINI

Wyeomyia (*Dodecamyia*) *mus*, new species.

Female. Head dark mouse gray, the eyes with a narrow continuous white border, widening below to cover most of the side. Proboscis long and slender, black. Palpi very short, black. Postnotum dark brown, with a distinct tuft of setæ posteriorly. Prothoracic lobes and mesonotum uniformly dark brown scaled; pleura with white scales. Abdomen blackish above, white below, the colors separated on the sides in a straight line. Legs entirely dark, the femora only whitish beneath. Wings with blackish scales, the cross-veins nearly in line; stems of the fork-cells about equal to the cells in length. Tarsal claws simple.

Male. Much damaged, but apparently with the coloration of the female.

Hypopygium. Side pieces bulbous, constricted at base, simple, hairy. Clasper slender, longer than the side piece, enlarged at base and slightly on the outer half; terminal spine very short, pointed, inserted inwardly just before the apex. Tenth sternites large and prominent with four or five long teeth at the tips. Aedoeagus conical, pointed. Ninth tergites large, with about six very long equal spines on each.

Types, female and male, No. 23715, U. S. Nat. Mus.; Los Baños, P. I., February 16, 1915, bred from *Nepenthes*.

Hodgesia ampyx, new species.

Head with flat dark gray scales behind, the anterior third of the vertex silvery white, forming a triangular spot, bordering the eyes, and widening on the sides. Prothoracic lobes with flat white scales and dark bristles. Mesonotum dark brown in the middle and behind, the anterior angles lighter in the integument; vestiture of sparse narrow hair-like scales of bronzy brown, and coarse blackish bristles. Metanotum dark brown, nude. Abdomen dark brown above, paler brown below, with a greenish reflection in some lights, without any markings. Legs dark brown, with bronzy luster below, the femora extensively whitish both above and below, nearly to the tips. Wing scales dark, the outstanding ones long and linear.

Types, two females, No. 23716, U. S. Nat. Mus.; Acc. No. 18399, Coll. of Agr., Univ. P. I.

Near *Hodgesia niveocaputis* Ludlow, but without any metallic scales on the abdomen.

Rachionotomyia monetifera, new species.

Female. Proboscis very long, black. Palpi rather long, though less than one-sixth of the proboscis, black. Clypeus and tori light testaceous. Head with a broad band of violet blue scales on the anterior two-thirds, the nape black. Integument of mesonotum pale, the vestiture of prothoracic lobes and mesonotum of dense narrow curved pale golden scales; scutellum with flat light blue scales; pleura with a large central silvery patch. Metanotum yellowish, nude. Abdomen

black scaled dorsally, venter golden; lateral segmental posterior silvery bands, reaching well up the sides. Legs blackish, the femora pale below and with two small silvery spots on the outer side following a basal streak on fore and mid legs; hind legs with one spot. Cross-veins in line; wing scales blackish.

Male. The antennal segments are somewhat shorter than in the female. Proboscis and palpi as in the female, the coloration also the same. Abdomen black with bronzy reflection, large triangular silvery spots posteriorly on the segments laterally, six in number, the first on abdominal segments 1-2, none on the eighth segment; venter yellow, without spots; last segment black.

Hypopygium. Side pieces conical, small, with an inner hairy simple lobe that reaches beyond the middle of the side piece. Clasper as long as the side piece, constricted slightly before the middle, the tip a little flattened and with slight granules; terminal spine short and pointed, inserted subapically. Tenth sternites large and prominent, wide, constricted before tip, the strong short terminal teeth radiating. Aedoeagus small, conical. Ninth tergites large, with many very long terminal spines.

Types, male and two females (one headless), No. 23717, U. S. Nat. Mus.; Los Baños, P. I., February 16, 1915, September 9, 1918, January 21, 1919.

Evidently allied to *Rachionotomyia powelli* Ludlow (*Uranotaenia powelli* Ludl., Can. Ent., xli, 235, 1909), but the coloration of the abdomen as described is quite different. Mr. F. W. Edwards has called my attention to the generic correction for *powelli* while this article is in press, so that there has been no opportunity for a comparison of types.

CULICINI

Culex (Jamesia) concolor Robineau-Desvoidy.

Culex concolor Robineau-Desvoidy, Mém. Soc. Hist. Nat., Paris, iv, 405, 1825.

Culex (Culex) gelidus Theobald.

Culex gelidus Theobald, Mon. Culic., ii, 20, 1901.

Culex (Culex) whitmorei Giles.

Taeniorhynchus whitmorei Giles, Journ. Trop. Med., vii, 367, 1904.

Taeniorhynchus argenteus Ludlow, Can. Ent., xxxvii, 98, 1905.

Leucomyia plegepennis Theobald, Mon. Culic., iv, 375, 1907.

Culex albus Leicester, Cul. of Malaya, 148, 1908.

Culex (Culex) hensemæon, new species.

Proboscis moderate, brown, darker at the tip and paler below. Head with coarse and rather sparse narrow curved golden scales on the vertex and pale erect forked ones; small flat white ones on the sides, extending a little way up as a narrow border to the eyes. Mesonotum dark brown, with coarse narrow curved light golden scales, divided by two impressed bare lines. Abdomen dark above, blackish, except for the pale bristles at ends of segments and a single triangular white band at the base of the second segment; no lateral patches; venter sordid yellowish scaled. Legs dark, the femora paler below; tips of femora and tibiæ, especially the hind pair, narrowly whitish. Wing scales brown, the outstanding ones long and linear. Fork-cells long, especially the upper. Tarsal claws simple. Length about 4 mm.

Type, female, No. 23718, U. S. Nat. Mus.; Los Baños, P. I., May 28, 1915.

Culex (Culex) quinquefasciatus Say.

Culex quinquefasciatus Say, Journ. Acad. Nat. Sci. Phila., iii, 10, 1823.

Culex pungens Weidemann (not Robineau-Desvoidy), Auss. zweifl. Ins., i, 9, 1828.

Culex fatigans Weidemann, Auss. zweifl. Ins., i, 10, 1828.

Anopheles ferruginosus Wiedemann, Auss. zweifl. Ins., i, 12, 1828.

Culex cubensis Bigot, Hist. fis. Isl. Cuba, vii, 329, 1856.

Culex penafielii Williston, La Naturaleza, vii, 326, 1887.

Culex skusii Giles, Gnats or Mosq., 292, 1900.

Culex quasipipiens Theobald, Mon. Culic., ii, 136, 1901.

Culex fouchowensis Theobald, Mon. Culic., ii, 137, 1901.

Culex fatigans luteoannulatus Theobald, Mon. Culic., ii, 159, 1901.

Culex fatigans macleayi Theobald, Mon. Culic., ii, 163, 1901.

Culex fatigans trilineatus Theobald (not Theobald), Mon. Culic., ii, 159, 1901.

Culex osakaensis Theobald (♂), Mon. Culic., iv, 439, 1907.

- Culex christophersii* Theobald, Mon. Culic., iv, 453, 1907.
Culex aikenii Dyar & Knab, Proc. U. S. Nat. Mus., xxxv, 61, 1908.
Culex quinquefasciatus dipseticus Dyar & Knab, Proc. Ent. Soc. Wash., xi, 34, 1909.
Culex lachrimans Dyar & Knab, Smith. Misc. Colls., Quart. Iss., iii, 259, 1909.
Culex revocator Dyar & Knab, Smith. Misc. Colls., Quart. Iss., iii, 256, 1909.
Culex goughii Theobald (♂), Union S. Afr., Dept. Agr., 1st rept. Vet. Res., 269, 1911.
Culex aseychae Dyar & Knab, Ins. Ins. Mens., iii, 112, 1915.

Culex (Culex) sitiens Wiedemann.

- Culex sitiens* Wiedemann, Auss. zweifl. Ins., i, 543, 1828.
Culex impellens Walker, Proc. Linn. Soc. Lond., iv, 91, 1860.
Culex annulirostris Skuse, Proc. Linn. Soc. N. S. W. (2), iii, 1737, 1889.
Culex microannulatus Theobald, Mon. Culic., i, 353, 1901.
Culex gnophodes Theobald, Mon. Culic., iii, 163, 1903.
Culex somaliensis Neveu-Lemaire, Arch. Parasit., x, 254, 1906.
Culex rolandi de Charmoy, Ann. Trop. Med. & Par., ii, 259, 1908.
Culex salus Theobald, Third Rep. Wellc. Lab., 256, 1909.

Culex (Culex) inelegans, new species.

Male. Antennæ whitish, the nodes black. Head white scaled, the vertex with narrow white scales mixed with straw-colored forked ones, the sides broadly with flat white scales. Mesonotum brown, with narrow curved golden brown scales. Abdomen entirely brown, paler below. Legs brown, femora paler below, their tips pale. Palpi and proboscis brown, the palpi exceeding the proboscis by more than the length of the last joint, the last two joints hairy.

Hypopygium. Side pieces over three times as long as wide, with a subapical prominence bearing three rods, equal in size, a large leaf, ribbed at base, and a stout seta. Clasper thick, attenuated outwardly, the spine subterminal and appendiculate. Tenth sternites with broadly spinose tips and long dark basal arm. Parameres long, curved, dark. Mesosome with terminal horn and five long teeth in a central group.

Type, male, No. 23719, U. S. Nat. Mus.; Los Baños, P. I., June 20, 1915. A female is tentatively associated with this, September 15, 1915, but it is not in good condition.

Culex (Culex) summorosus, new species.

Male. Palpi with white rings at the bases of the last two joints; proboscis with a faint whitish ring beyond the middle. Head with pale scales, as far as can be made out, as in the preceding species. Mesonotum with narrow curved golden brown scales. Legs with traces of white markings at the tarsal joints.

Hypopygium. Side piece over three times as long as wide, the subapical prominence bearing three rods, of which the basal is stout at the base, a rounded-ended filament and a large leaf. Clasper thick, attenuated outwardly, the spine small. Tenth sternites with broadly spinose tips and long dark basal arm. Parameres long, curved, dark. Mesosome ligulate, curved, the inner angle quadrate and fimbriate, the outer angle bearing six long teeth in a close group, one of the teeth being longer than the others and horn-like. Aedoeagus of two concave pieces, denticulate on the margin.

Type, male, No. 23725, U. S. Nat. Mus.; Los Baños, P. I., January 15, 1918. Two females are tentatively associated here, September 22, 1915, and October 22, 1917.

Culex (Neoculex) fidelis, new species.

Palpi of male slender, scarcely longer than the proboscis, brown. Head with many white scales, forming a patch on the sides. Mesonotum with narrow curved dark bronzy brown scales. Abdomen entirely dark, blackish above, paler below. Legs with the femora white beneath, dark brown, unmarked.

Hypopygium. Side piece over three times as long as wide, subapical prominence bearing two stout rods, a slender rod, three short filaments and a flattened filament. Clasper stout, short, the terminal spine rather long. Tenth sternites weak, spinose at tip, without distinct basal arm. Mesosome conical, simple, coarsely granular on the inner face outwardly, the pair united by a central bridge.

Types, four males, No. 23720, U. S. Nat. Mus.; Los Baños, P. I., July 28, 1915. Two females have been tentatively associated, September 17 and November 8, 1917.

Mansonia (Mansonioides) annulifera Theobald.

Panoplites annulifera Theobald, Mon. Culic., ii, 183, 1901.

Mansonia septempunctata Theobald, Ann. Nat. Mus. Hung., iii, 187, 1905.

Mansonioides septemguttata Theobald, Mon. Culic., iv, 499, 1907.

Mansonia (Mansonia) uniformis Theobald.

Panoplites uniformis Theobald, Mon. Culic., ii, 180, 1901.

Mansonia australiensis Giles, Gnats or Mosq., 2 ed., 355, 1902.

Mansonia (Coquillettia) diaeretus, new species.

Head with narrow curved dark brown scales. Mesonotum light brown, with small dark brown scales; three lines of pale golden scales, running back to the antescutellar space. First abdominal segment brown, the rest dark blue dorsally; basal segmental lateral small dull yellow spots; venter yellow scaled, the apices of the segments dark banded. Legs dark with bluish reflection, the femora pale below. Tarsal claws simple. Wing scales dark with bronzy reflection, short and ovate, long outstanding ones only on the second vein within the cross-veins.

Types, two females, No. 23721, U. S. Nat. Mus.; Los Baños, P. I., March 5, 1918, January 1, 1919.

Apparently similar to *M. aureosquamata* Ludlow (Can. Ent., xli, 234, 1909), but without white abdominal spots and different wing-scaling. In the absence of a male, I am not certain of the generic reference.

Armigeres obturbans Walker.

Culex obturbans Walker, Proc. Linn. Soc. Lond., iv, 91, 1860.

Culex ventralis Walker, Proc. Linn. Soc. Lond., v, 144, 1865.

Culex subalbatus Coquillett, Proc. U. S. Nat. Mus., xxi, 302, 1898.

Armigeres panalectros Giles, Gnats or Mosq., 2 ed., 386, 1904.

Leicesteria digitata Edwards.

Leicesteria digitata Edwards, Bull. Ent. Res., iv, 262, 1914.

Aedes (Stegomyia) aegypti Linnaeus.

Culex aegypti Linnaeus, Hasselquist, Palestina Reise, 470, 1762.

Culex argenteus Poiret, Journ. de Phys., xxx, 245, 1787.

Culex fasciatus Fabricius (not Müller, not Meigen), Syst. Antliat., 36, 1805.

- Culex calopus* Meigen, Syst. beschr. Eur. zweifl. Ins., i, 3, 1818.
Culex mosquito Robineau-Desvoidy, Mém. Soc. Hist. Nat., Paris, iii, 407, 1827.
Culex frater Robineau-Desvoidy, Mém. Soc. Hist. Nat., Paris, iii, 408, 1827.
Culex taeniatus Wiedemann, Ausser. zweifl. Ins., i, 10, 1828.
Culex kounoupi Brullé, Exped. Scient. do Morée, Zool., iii, 289, 1836.
Culex annulitarsis Macquart, Webb & Berth., Hist. Nat. Iles Can., ii, Ins. 99, 1839.
Culex viridifrons Walker, List Dip. Brit. Mus., i, 3, 1848.
Culex excitans Walker, List Dipt. Brit. Mus., i, 4, 1848.
Culex formosus Walker, List Dipt. Brit. Mus., i, 4, 1848.
Culex inexorabilis Walker, List Dipt. Brit. Mus., i, 4, 1848.
Culex exagitans Walker, Ins. Saund., Dipt., 430, 1856.
Culex impatibilis Walker, Proc. Linn. Soc., Zool., iv, 91, 1860.
Culex zonatipes Walker, Proc. Linn. Soc., Zool., v, 229, 1861.
Culex bancrofti Skuse, Proc. Linn. Soc. N. S. W. (2), iii, 1740, 1889.
Culex elegans Ficalbi, Bull. Soc. Ent. Ital., xxi, 95, 1889.
Culex rossii Giles, Journ. Trop. Med., ii, 64, 1899.
Stegomyia fasciata luciensis Theobald, Mon. Culic., i, 297, 1901.
Stegomyia fasciata queenslandensis Theobald, Mon. Culic., i, 297, 1901.
Stegomyia nigeria Theobald, Mon. Culic., i, 303, 1901.
Stegomyia fasciata persistans Banks, Phil. Jn. Sci., i, 996, 1906.
Culex anguste-alatus Becker, Mitt. zool. Mus. Berlin, iv, 79, 1908.
Culex albopalposus Becker, Mitt. zool. Mus. Berlin, iv, 80, 1908.
Stegomyia fasciata atritarsis Edwards, Bull. Ent. Res., x, 129, 1920.

Aëdes (Stegomyia) albopictus Skuse.

- Culex albopictus* Skuse, Indian Mus. Notes, iii, No. 5, 20, 1895.
Stegomyia scutellaris samarensis Ludlow, Journ. N. Y. Ent. Soc., xi, 138, 1903.

Aëdes (Stegomyia) gardnerii Ludlow.

- Pseudostegomyia gardnerii* Ludlow, Can. Ent., xxxvii, 99, 1905.

The genitalia of this species have not been described: Hypopygium. Side piece elongate, the chitinized part narrow on the outer half; inner area membranous, a stout hair arising from its angle; a lobe at the middle, semidetached from the side piece, bearing many long hairs. Clasper as long as the side piece, slightly expanded at tip, with a long spine inserted

slightly before the tip, the tip of the spine widened. Tenth sternites thin and broadly bulbous at tip. Aedoeagus ending in a cluster of long teeth.

The structure is much as in *Aedes variegata* Doleschall (*pseudoscutellaris* Theobald), although the coloration of the adults is so different.

Aedes (Finlaya) poicilia Theobald.

Finlaya poicilia Theobald, Mon. Culic., iii, 283, 1903.

Aedes (Finlaya) nivea Ludlow.

Stegomyia nivea Ludlow, Journ. N. Y. Ent. Soc., xi, 139, 1903.

Stegomyia pseudonivea Theobald, Ann. Nat. Mus. Hung., iii, 75, 1905.

Aedes (Ecculex) vexans Meigen.

Culex vexans Meigen, Syst. Besch. Eur. zweifl. Ins., vi, 241, 1830.

Culex articulatus Rondani, Bull. Soc. Ent. Ital., iv, 30, 1872.

Culex sylvestris Theobald, Mon. Culic., i, 406, 1901.

Culex vagans Theobald, Mon. Culic., i, 411, 1901.

Culex nocturnus Theobald (♀), Mon. Culic., iii, 159, 1903.

Culex montcalmi Blanchard, Les Moust., 407, 1905.

Culicada nipponii Theobald, Mon. Culic., iv, 337, 1907.

Culicada minuta Theobald, Mon. Culic., iv, 388, 1907.

Culex stenocrus Theobald, Mon. Culic., iv, 395, 1907.

Culex cruthrosops Theobald, Mon. Culic., v, 229, 1910.

Culex pseudostenocrus Theobald, Mon. Culic., v, 343, 1910.

Aedes euochrus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 716, 1917.

Toxorhynchites regius Tenant.

Culex regius Tenant, Ceylon, 268, 1859.

Megarhinus gilesii Theobald, Mon. Culic., i, 227, 1901.

Megarhinus lewaldii Ludlow (♂), Can. Ent., xxxvi, 233, 1904.

Worcesteria grata Banks, Phil. Jn. Sci., i, 780, 1906.

Toxorhynchites argenteotarsis Ludlow, Can. Ent., xxxviii, 367, 1906.

Toxorhynchites metallicus Leicester.

Toxorhynchites metallicus Leicester, The Entom., xxxvii, 37, 1904.

A single female specimen, bred from *Nepenthes*.

Uranotaenia pygmaea Theobald.*Uranotaenia pygmaea* Theobald, Mon. Culic., ii, 254, 1901.**Aëdeomyia catasticta** Knab.*Aëdeomyia catasticta* Knab, Ent. News, xx, 387, 1909.**Anopheles (Myzomyia) tessellatum** Theobald.*Anopheles tessellatum* Theobald, Mon. Culic., i, 175, 1901.*Anopheles deceptor* Dönitz, Zeit. f. Hyg. & Inf., xli, 60, 1902.*Myzomyia thorntonii* Ludlow, Can. Ent., xxxvi, 69, 1904.*Dactylomyia ceylonica* Newstead & Carter, Ann. Trop. Med., iv, 377, 1910.

According to Swellengrebel and Swellengrebel-de Graaf, writing on the *Anopheles* of the Dutch East Indies (Tijd. voor Ent., lxiii, 100, 1920), *tessellatum* Theo. is a variety of *A. (Neomyzomyia) punctulata* Dönitz. They do not mention the present species, which would presumably be known as *deceptor* Dön., if this conclusion is correct.

Anopheles (Myzomyia) ludlowii Theobald.*Myzomyia ludlowii* Theobald, Mon. Culic., iii, 42, 1903.**Anopheles (Myzomyia) indefinita** Ludlow.*Myzomyia rossii indefinita* Ludlow, Can. Ent., xxxvi, 229, 1904.

Swellengrebel and Swellengrebel-de Graaf place *indefinita* Ludlow as a synonym of *rossii* Giles, and *indefinita* Edwards, not Ludlow, as a synonym of *vaga* Dönitz, the latter reference presumably not applicable to the Philippines. I do not feel satisfied to pronounce on these matters with the present material.

Anopheles (Nyssorhynchus) fuliginosus Giles.*Anopheles fuliginosus* Giles, Gnats or Mosq., 160, 1900.*Anopheles leucopus* Dönitz, Ins. Borse, v, 37, 1901.**Anopheles (Myzorhynchus) barbirostris** van der Wulp.*Anopheles barbirostris* van der Wulp, Leyden Mus. Notes, vi, 46, 1884.

KEY TO THE SPECIES HERE LISTED

1. Palpi of the female short, thorax rounded; legs moderate;
body scaled 2

- Palpi of female as long as proboscis; thorax elongate; legs long; body generally hairy..... 26
2. Postnotum with a little tuft of setæ.....*Wyeomyia mus* Dyar
Postnotum bare 3
3. Proboscis very long, as long as thorax and abdomen,
Rachionotomyia monetifera Dyar
Proboscis moderate 4
4. Wing cells with moderate or short stems..... 5
Wing cells with very long stems..... 23
5. Abdomen of female blunt at the tip..... 6
Abdomen of female more or less distinctly pointed..... 18
6. A small dark species with metallic silver head spot and dark mesonotum*Hodgesia ampyx* Dyar
Larger; head not silvery except as concolorous with mesonotum 7
7. Wing-scales narrow 8
Wing-scales broad 17
8. Large; dark brown; posterior abdominal segments stained with luteous.....*Culex concolor* Robineau-Desvoidy
Not so colored..... 9
9. Mesonotum white-marked 10
Mesonotum not white-marked..... 11
10. Mesonotum white on anterior two-thirds..*Culex gelidus* Theobald
Mesonotum white, enclosing four brown marks,
Culex whitmorei Giles
11. Abdomen with basal segmental white bands..... 12
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12. Proboscis and legs white-marked.....*Culex sitiens* Wiedemann
Proboscis and legs unmarked.....*Culex quinquefasciatus* Say
13. Large, with partial dorsal banding or lateral spots..... 14
Small, without any dorsal banding..... 15
14. Mesonotum brown, abdomen with one dorsal white band on second segment.....*Culex hensemaeon* Dyar
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16. Male hypopygium with large toothed mesosome,
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17. Mesonotum with six bluish silvery spots,
Mansonia annulifera Theobald
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18. Wings spotted with white..... 19
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19. Wing scales normal, narrow.....*Aedes poicilia* Theobald
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20. Mesonotum uniformly brown..... 21
 Mesonotum with silvery marks..... 23
21. Tarsi brown 22
 Tarsi white-marked.....*Aedes vexans* Meigen
22. Palpi of female very short.....*Armigeres obturbans* Walker
 Palpi one-third as long as proboscis..*Leicesteria digitata* Edwards
23. Mesonotum silvery on anterior two-thirds.....*Aedes nivea* Ludlow
 Mesonotum with broad straight silvery band on each side,
Aedes gardnerii Ludlow
 Mesonotum with narrow curved silvery band on each side,
Aedes aegypti Linnaeus
 Mesonotum with straight narrow median silvery line,
Aedes albopicta Skuse
24. Proboscis straight, normal; small species,
Uranotaenia pygmaea Theobald
 Proboscis hooked; very large species..... 25
25. Caudal tuft black, white and orange; legs with white marks,
Toxorhynchites regius Tenant
 No caudal tuft; legs without white,
Toxorhynchites metallicus Leicester
26. Tip of hind tarsi white.....*Anopheles fuliginosus* Giles
 Tip of hind tarsi not white..... 27
27. Palpi black, or tip whitish shaded,
Anopheles barbirostris van der Wulp
 Palpi with last two joints white, with narrow basal black rings. 28
28. Proboscis yellowish with a dark band,
Anopheles tessellatum Theobald
 Proboscis brown 29
29. Yellow marks on costa smaller; third dark spot with two spots
 below on long vein.....*Anopheles ludlowii* Theobald
 Yellow marks on costa larger; third dark spot with one spot
 below, more or less joined to it....*Anopheles indefinita* Ludlow¹

¹ Probably only a variety of *ludlowii* Theo.

NEW LEPIDOPTERA, CHIEFLY FROM MEXICO,
WITH SYNONYMIC NOTES

By HARRISON G. DYAR

Family PIERIDÆ

Anthocharis ellena, new species.

Fore wing yellowish white, apex falcate, outer margin excavate; a round black discal dot between veins 4 and 5; apex, from end of vein 4 to outer third of costa, dark orange, the margin itself in this patch broadly black, the powdering extending over the orange area nearly to its inner termination; a small black mark at end of veins 2 and 3. Hind wing yellow, with small black marks at the ends of the veins. Beneath light yellow; fore wing with large discal spot and dark marblings in the apical area; hind wing with open marblings, on the inner half of the wing forming patches, on the outer half grayer and in smaller spots. Expanse, 41 mm.

Type, male, No. 23619, U. S. Nat. Mus.; Mexico City, Mexico, July, 1919 (R. Müller). Paratype, male, a flown specimen, which looks lighter in color, with the same data.

Family HESPERIIDÆ

Butleria cyclosticta, new species.

Dark brown, slightly bronzy; fore wings with seven small whitish specks in an irregular circle—three subapical, the lower a little out of line, one above vein 3, one above vein 2, one at base of vein 2, one in the upper part of the cell before the end. Below, shaded with rusty, the spots of fore wing repeated; hind wing uniform rusty brown, with slight trace of paler outer band. Expanse, 24 mm.

Type, male, No. 23621, U. S. Nat. Mus.; near Mexico City, Mexico, August (R. Müller); paratypes, male and female, Mexico City, July, and Guadalupe, Mexico (R. Müller).

Lychnuoides frappenda, new species.

Dark brown. Fore wings with a large light yellow marking of three confluent spots, one quadrate in the end of the

cell, a rhomboidal one between veins 2-3, and a third between veins 1-2, excavate without and pointed within, the three confluent; a smaller spot between veins 3-4, drawn out on its lower corner; three subapical spots fused into a straight band. Hind wing with yellow fringe at apex. Beneath, dark brown, the markings of fore wing repeated, the anal area suffused with yellow. Hind wing a little purplish irrorated, defining faintly a dark base and broad outer band. Apical fringe above. Expanse, 40 mm.

Type, male, No. 23620, U. S. Nat. Mus.; Mexico City, Mexico, August, 1919 (R. Müller); paratype, female, near Mexico City, July (R. Müller).

Family NOCTUIDÆ

Subfamily AGROTINÆ

Mesembreuxoa intricata, new species.

Fore wing dark purplish brown in ground-color; costa broadly clay-color from base to reniform; subterminal space rosy lilacine, cut by wedge-shaped black marks before the subterminal line, the rosy shade running in below cell to inner line, with a whitish clay-colored line below; inner line rosy, forming an arc, with rosy scales preceding; outer line slight; subterminal line pale, near the margin, forming cusps; orbicular oblique, rosy with luteous edge; reniform similar, erect, joining a narrow pale line along median vein; fringe dull rosy, pale at base. Hind wing pale over the disk, the veins, discal line and margin broadly fuscous. Expanse, 35 mm.

Type, male, No. 23622, U. S. Nat. Mus.; Mexico [City, Mexico], September [1919] (R. Müller).

Euxoa cyttara, new species.

Fore wing purplish brown on inner margin, more reddish centrally, the costa broadly pale luteous to middle of cell. The pale color does not attain the costal edge, but involves most of the basal space; lines marked on costa, narrowly broken, reappearing below, slender blackish, nearly straight; a blackish shade from reniform, widening on margin; claviform a

dark cusp; orbicular elongated the length of the cell, of two pale lines; reniform moderate, pale, more reddish filled; a row of pale subterminal dashes between the veins, most distinct in the dark shade; fringe dark with pale spots at the ends of the veins. Hind wing fuscous, lighter over the disk between the veins. Expanse, 32 mm.

Type, male, No. 23726, U. S. Nat. Mus.; Venadio, Sinaloa, Mexico (A. Kusche, gift of B. Preston Clark).

Subfamily HADENINÆ

Hyssia stigmatosa, new species.

Fore wing dark lilacine brown with a coppery tint; lines faint, double, wavy; stigmata conspicuous, the orbicular oblique, large, black-edged, paler filled; reniform similar erect, black filled in the lower portion; claviform large, coppery filled; a blackish median shade, bent in cell; subterminal line broken into dots, coppery without, black within. Hind wing blackish at apex, disk lighter, the veins dark; a faint discal mark; fringe rosy. Expanse, 32 mm.

Type, male, No. 23624, U. S. Nat. Mus.; Mexico [City, Mexico], September [1919] (R. Müller).

Hyssia jugifera, new species.

Fore wing lilacine brown, the median space narrowed below; lines pale, nearly straight, converging, the inner bent at inner margin, black-edged without. Median space dark filled. Orbicular and reniform pale, strongly confluent below, whitish edged, reddish filled. Terminal space dark filled. Subbasal line edged with black on both sides. Hind wing dark fuscous outwardly, pale at base. Expanse, 28 mm.

Type, male, No. 23623, U. S. Nat. Mus.; Mexico [City, Mexico], September [1919] (R. Müller).

Subfamily CUCULLIINÆ

Rhizotype nudor, new species.

Brown; fore wing with subterminal and terminal spaces paler, cut by the irregular dark subterminal line; inner and

outer lines evenly curved, approximate, the inner arcuate, the outer inbent below cell, pale, dark edged. Orbicular and reniform pale edged, dark filled, both large; claviform adjacent to orbicular, less distinctly marked, though similar. Subbasal line dark, angled on costa. Hind wing dark brown, the fringe pale, dark interlined. Expanse, 20 mm.

Type, male, No. 23625, U. S. Nat. Mus.; Mexico [City, Mexico], September [1919] (R. Müller). Paratype, male, with the same data.

Subfamily ACRONYCTINÆ

Parastichtis stagmatipennis, new species.

Dark gray; a double white point at bases of veins 3-4. Ordinary markings faint, black; stigmata outlined in black; lines black, slender, denticulate; median space below cell a little paler than the rest of the wing. Hind wing pale between the veins, dark fuscous outwardly. Expanse, 42 mm.

Type, female, No. 23626, U. S. Nat. Mus.; Mexico [City, Mexico], September [1919] (R. Müller). Paratype, male, with the same data.

Bryophilopsis, new genus.

Fore wing with an areole; fore tibiae and tarsi unarmed; frons with rounded prominence; abdomen with crests on first and fourth segments; proboscis weak; prothorax with divided crest; metathorax with single crest; vestiture almost entirely of scales.

Bryophilopsis edobasis, new species.

Head, thorax and base of fore wing on inner margin pale yellow; a spot at apex and tornus nearly of this color, but a little gray shaded. Fore wing lilacine purplish, broadly dark grayish through the median space; base and subterminal area reddish. Reniform large, white powdery, with a reddish center; orbicular a small pale ring; claviform lost. Lines faint, pale, powdery, the inner double, the outer appearing on costa above reniform, running into the pale subterminal

shade. Margin dark gray; fringe gray, dotted with white. Hind wing white, a small discal dot, outer pale gray line, and slight shades at apex and tornus; small blackish marks along termen. In the paratype, the hind wings are wholly gray shaded, the discal mark large. Expanse, 24 mm.

Type, female, No. 23729, U. S. Nat. Mus.; Cuernavaca, Mexico, June, 1906 (W. Schaus); paratype, female, Venadio, Sinaloa, Mexico (A. Kusche, gift of B. Preston Clark).

Xylomoea staticis, new species.

Dark clay-color, shaded with bright brown on costal area. Base a little brown shaded; inner line rigid, brown, sharply angled on median vein; orbicular a black point; reniform two indefinite ringlets, separated by a brown bar; median shade broad, brown, touching the outer line below; outer line angled from costa, oblique below, brown, straight, subterminal line wavy, brown; termen narrowly white, with black dots in base of fringe; fringe with white scales, mostly brown in the excavation above vein 4. Hind wing brown shaded, paler at base, the fringe pale. Expanse, 24 mm.

Type, male, No. 23730, U. S. Nat. Mus.; Venadio, Sinaloa, Mexico (A. Kusche, gift of B. Preston Clark); paratypes, two males, with the same data.

Subfamily ERASTRINÆ

Cymonia, new genus.

Fore wing with vein 10 stalked from the accessory cell, 10 not anastomosing with 11; fore tibia without claw; frons with a corneous plate with raised edges, occupying the whole front to the antennæ, with a large round central process, nearly filling the plate.

Cymonia harminella, new species.

Fore wing clay-color, the margin broadly olive brown, with a strongly curved inner edge, parallel to outer margin. Hind wing dull reddish. Expanse, 23 mm.

Type, female, No. 23731, U. S. Nat. Mus.; Venadio, Sinaloa, Mexico (A. Kusche, gift of B. Preston Clark).

Superficially resembling *Monocymia harmina* Schaus.

***Chlorhoda semifascia*, new species.**

Fore wing soft light gray, tinged with reddish outwardly below. A black band from costa to median vein, occupying the space between orbicular and reniform; a black arc from costa subapically; ordinary lines lost, represented by scattered dots; stigmata obsoletely white edged. Hind wing creamy, slightly shaded with fuscous on the margin; fringe pale. Expanse, 23 mm.

Type, male, No. 23732, U. S. Nat. Mus.; Venadio, Sinaloa, Mexico (A. Kusche, gift of B. Preston Clark). Paratypes, two males, with the same data.

***Bryocodia clinopetes*, new species.**

Basal space broadly pale clay-color, marked with red-brown, the bounding line excurved on submedian, the costal area blackish; rest of wing pale gray, a white shade from end of cell to subapex; outer line blackish, double, crenulate, far out, followed by clay-color and red-brown, most distinct above tornus; terminal space with a whitish patch at veins 2-4; black terminal dashes between the veins; fringe dark gray; stigmata obsolete, the reniform showing as two pale ringlets. Hind wing sordid yellowish, dark fuscous on the margin; fringe white. Expanse, 22 mm.

Type, female, No. 23733, U. S. Nat. Mus.; Venadio, Sinaloa, Mexico (A. Kusche, gift of B. Preston Clark). Paratypes, one male and two females, with the same data.

***Eustrotia concava*, new species.**

Base of fore wing dark lilacine brown, the claviform contrasting pale red; a light spot at base, punctate with black; inner line faint, pale, black-marked on costa; outer area pale wood-brown, limited by a line which forms an arc within reniform, a point at vein 3, thence along outer line; reniform comma-shaped, pale, narrowly outlined in dark; outer line pale, black-dotted, excurved over cell; a quadrate subapical dark patch; subterminal line dark, wavy; a terminal crenulate black line; fringe dark, with a pale spot subapically and at

middle. Hind wing dark fuscous, paler between the veins; fringe pale. Expanse, 16 mm.

Type, female, No. 23627, U. S. Nat. Mus.; Colima, Mexico, August [1919] (R. Müller). Paratype, female, with the same data.

Eustrotia semiglauca, new species.

Head pale green, with two black spots on frons; collar stained with black; thorax and basal two-thirds of fore wing pale green, the termen deep brown; inner limit of the dark area erect from before tornus to middle of cell, then outward at right angles and again to costa; a dark brown mark at base of costa, and of inner margin; several dark specks along the costa and a point in cell. Hind wing dark fuscous, the fringe pale with dark interline. Expanse, 16 mm.

Type, female, No. 23736, U. S. Nat. Mus.; Venadio, Sinaloa, Mexico (A. Kusche, gift of B. Preston Clark). Paratype, female, with same data.

Subfamily SARROTHRIPINÆ

Baileya aphanes, new species.

Fore wing pale gray, whitish shaded along costa at middle, apex and subterminally, leaving a brown oblique shade from costa to reniform; a small dark spot on inner margin near base; a triangular dark patch preceding tornus; outer line smoothly excurved, joining the dark patch below; subterminal line whitish, running near the margin, the terminal space dark shaded; fringe pale; orbicular a white ring with dark filling; reniform a dark bar, surrounded by a distant faint ring. Hind wing dark fuscous, fringe pale. Expanse, 22 mm.

Type, female, No. 23734, U. S. Nat. Mus.; Venadio, Sinaloa, Mexico (A. Kusche, gift of B. Preston Clark). Paratypes, four males, with the same data.

Subfamily NOCTUINÆ

Anticarsia suffervens, new species.

Light reddish brown; lines slender; inner and median red-brown, the inner of three arcs; median oblique to median vein,

forming a point on vein 1; reniform narrow, upright, pale yellowish, with a central dark curved line; outer line dark brown, excurved over the cell, forming points on the veins; a dark shade between it and reniform; subterminal line of rounded dark brown spots between the veins; terminal line dark, crenulate; fringe reddish. Hind wing similar, inner line reddish, forming an angle at vein 4; median line blackish, with pale bluish scaling on both sides; submarginal line pale, showing traces of dots; fringe as on fore wing. Beneath light red, the median line of both wings strongly repeated in blackish, smooth, the other lines faint. Expanse, 33 mm.

Type, female, No. 23628, U. S. Nat. Mus.; Zacualpan, Mexico, July [1919], (R. Müller).

***Anticarsia repugnalis* Hübner.**

Anticarsia ferruginea Smith, Journ. N. Y. Ent. Soc., viii, 174, 1900.

Family GEOMETRIDÆ

Subfamily GEOMETRINÆ

***Melemaea antiquorum*, new species.**

Fore wing brownish straw-color; two oblique, slightly curving bands, brown within, pale without, the inner from costa before apex to inner margin at base, the outer from apex to middle of inner margin; a faint brownish shade in the cell. Hind wing straw color, tinged with brown at tornus, and with a trace of a fine brown line across the median nervures. Expanse, 24 mm.

Type, male, No. 23629, U. S. Nat. Mus.; near Mexico City, Mexico, July [1919], (R. Müller).

***Apicia endoglauca*, new species.**

Median space dull olive green, basal and terminal spaces dark purple-brown; lines slender, dusky, separating the areas, the inner slightly toothed on median vein and vein 1; a faint dark discal bar. Hind wing yellowish clay-color, thickly irrorated with red-brown, broadly darker at tornus; a small discal point. Expanse, 28 mm.

Type, male, No. 23630, U. S. Nat. Mus.; near Mexico City, Mexico, September [1919], (R. Müller).

Lychnosea reversaria, new species.

Fore wing straw-colored, densely irrorated with dark brown; lines pale, perfectly straight, nearer together on inner margin than on costa; irrorations on termen more reddish than on the rest of the wing. Hind wing cream-color, finely irrorated with brown on the outer half. Expanse, 30 mm.

Type, female, No. 23621, U. S. Nat. Mus.; Mexico City, Mexico, February, 1920 (R. Müller).

Subfamily LARENTIINÆ

Eudule eulathes, new species.

White; costa brownish yellow from base to end of cell; veins of both wings narrowly lined in black, less distinctly on hind wings. Expanse, 25 mm.

Type, female, No. 23632, U. S. Nat. Mus.; Zacualpan, Mexico (R. Müller). Paratypes, two males and a female, probably all from the same place, one marked Zacualpan, November, 1911, the two others without exact locality.

Psaliodes fervescens, new species.

Fore wing brown, irregularly shaded with reddish in sub-basal and subterminal spaces; lines broad, spotted; subbasal dark yellow, most marked on costa; inner line broken into spots, those in the center of the wing white; outer line similar; subterminal line of three groups of yellow spots, irregularly duplicated and with yellow spots in the otherwise blackish fringe. Hind wing dark reddish, shaded with fuscous, the termen dark, with yellow spots in the fringe, somewhat as on fore wing. Below, fore wing reddish, the marks repeated; hind wing yellow, with irregular outer and submarginal blackish strigose bands; termen with dark strigæ, the fringe spotted with yellow. Expanse, 13 mm.

Type, female, No. 23633, U. S. Nat. Mus.; near Mexico City, Mexico, August [1919], (R. Müller).

Family COCHLIDIIDÆ

Vipsania Druce.

The male antennæ are simple, flattened. In my paper (Proc. U. S. Nat. Mus., xxix, 1905), p. 361, dichotomy 32, insert: "Palpi three times as long as head . . . *Vipsania*," and delete dichotomy 13 in toto.

Vipsania rosabella, new species.

Thorax and fore wing yellow; vertex and front of head rosy brown; palpi dark brown. Fore wing with an oblique dark brown slightly wavy band from before apex to inner margin near base; a second faint band from near apex to inner margin at middle, the space between filled in with pink. Hind wing yellow, the inner margin broadly rosy, spreading faintly over the disk. Expanse, 28 mm.

Type, female, No. 23617, U. S. Nat. Mus.; Escuintla, Guatemala, May (Schaus & Barnes).

Vipsania cacagamelia, new species.

Fore wing straw-yellow with dull pink shading on inner margin below vein 1; veins narrowly brown; a brown line from near apex to inner fourth of inner margin; a fine line from the same point on costa to outer fourth of inner margin. Hind wing straw-color, the veins dark; inner margin broadly duli rosy. Thorax yellow; abdomen rosy. Expanse, 23 mm.

Types, two males, No. 23618, U. S. Nat. Mus.; Cuernavaca, Mexico, July, 1906 (W. Schaus), and Zacualpan, Mexico. August, 1913 (R. Müller).

Vipsania schevi Schaus.

Lithacodes schevi Schaus, Proc. U. S. Nat. Mus., lvii, 150, 1920.

Vipsania melanois Dyar.

Pseudovipsania melanois Dyar, Proc. U. S. Nat. Mus., xlii, 98, 1912.

This is possibly the male of *V. unicolor* Dyar.

Isochaetes beutenmuelleri Hy. Edwards.

Tanadema rufescens Schaus, Proc. U. S. Nat. Mus., lvii, 149, 1920.

The occurrence of this species in Guatemala adds considerably to the known distribution.

Venadicodia, new genus.

Male antennæ simple, flattened; palpi upturned to above vertex, the last joint slender. Fore wing with vein 6 from the cross-vein, 7-10 stalked, 7 and 10 shortly so, 8-9 long stalked. Hind wing with 6-7 very long stalked. Fore wing broad and square; hind wing ample. Hind tibiæ with two pairs of spurs.

Type: *Lithacodes albipuncta* Schaus (Proc. U. S. Nat. Mus., lvii, 149, 1920).

Falls in my table with *Cochlidion*, dichotomy 35, but veins 6-7 of hind wing long-stalked.

Vipsorola, new genus.

Male antennæ bipectinate to the tips, the two rows of pectination approximate on the under side. Palpi porrect, the short end-joint down turned, exceeding the front. Hind tibiæ with two pairs of spurs. Fore wing with veins 7-10 stalked, long and pointed; hind wing trigonate, veins 6-7 stalked.

Type: *Tanadema semivitrea* Schaus (Proc. U. S. Nat. Mus., lvii, 149, 1920).

Falls in my table with *Heuretes*, dichotomy 23, but differs in the wing shape, which is much as in the male of *Phobetron*.

Epiperola vafera Druce.

Perola gaya Schaus, Proc. U. S. Nat. Mus., lvii, 148, 1920.

Placed by me in *Paleophobetron* (Proc. U. S. Nat. Mus., xxix, 382, 1905), but wrongly; the palpi in the specimen which was before me at the time were unnaturally compressed.

Epiperola paida Dyar.

Perola osscata Schaus, Proc. U. S. Nat. Mus., lvii, 148, 1920.

Family PYRALIDÆ

Subfamily EIPASCHIINÆ

Oneida diploa, new species.

Fore wing smooth dark purplish gray; a band at basal third of raised brown and yellowish scales, followed by two brown arcs, and two dark gray arcs; two little raised brown spots below end of cell; an apical mark of whitish, with three brown streaks, bounded inwardly by a black arc; a curved brown raised spot preceding this, beyond end of cell. Hind wing pale creamy, with darker terminal line. A patch of straw-colored scales below before origin of vein 2. Expanse, 27 mm.

Type, male, No. 23634, U. S. Nat. Mus.; Zacualpan, Mexico, July (R. Müller). Paratype, female, from the same locality, May, 1919 (R. Müller).

Family ZYGAENIDÆ

Triprocris venadiocola, new species.

Head orange-yellow, vertex black; thorax black, the patagia orange; fore wing orange for two-thirds, the terminal third black, the junction of the colors a little irregular. Hind wing black on the margin, the discal area hyaline, the costa orange-yellow to middle of cell and nearly to apex. Expanse, 32 mm.

Type, female, No. 23735, U. S. Nat. Mus.; Venadio, Sinaloa, Mexico (A. Kutsche, gift of B. Preston Clark). Paratypes, two males and a female with the same data.

NOTE ON THE DISTRIBUTION OF THE FLOOD-MOSQUITOES OF THE WEST

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

As noted by Mr. Eric Hearle (Can. Ent., lii, 115, 1920), one of the mosquitoes breeding in flood-pools is *Aedes aldrichi* D. & K. This species apparently breeds nowhere else; but

two other species occur in the flood-pools, although not breeding exclusively in them. These are *Aedes vexans* Meigen and *Aedes cinereus* Meigen, both common to America and Europe, and not at all particular in their habits. I made a visit to Mission City, British Columbia, July 14, 1920, where Mr. Hearle very kindly took me over the ground and explained the problem. All three species noted above occurred, the first two in abundance, the latter rarely. The adults were on the wing at this time, although some larvæ were left. Specimens from this breeding were taken at Sumas, Washington, July 15, 1920 (H. G. Dyar).

Similar floods occur in the lower Columbia River. In passing Vancouver, Washington, on the train, high water was noted, and a trip to a forest in the general vicinity resulted in showing both *aldrichi* and *vexans* well spread in the timber. Specific locality for both species: Montavilla, Oregon (6 miles east of Portland), July 26, 1920 (H. G. Dyar). I have also both species from Hood River, Oregon, *vexans*, July 17 and September 24, 1917 (F. R. Cole), the latter worn and almost unrecognizable, and *aldrichi*, June 13, 16, 20, and July 7, 1917 (F. R. Cole).

It seems possible that *Aedes gonimus* D. & K., from Kerrville, Texas, is a flood-species allied to *aldrichi*. The markings are similar, the dark mesonotal stripes narrower, the ground color more golden. The region about Kerrville is subject to floods, being in a region of low hills of coral rocks. However, nothing certain can be said until the male has been discovered.

NEW GENERA AND SPECIES OF AUSTRALIAN TRICHOGRAMMATIDÆ

(Hymenoptera)

By A. A. GIRAULT

The following new genera and species are now added to our knowledge of the Australian fauna. The types are in the Queensland Museum. All from forest, and Queensland.

Oligosita australica, new species.

Same as *australiensis*, but fore wings not widest a bit beyond stigmal vein, but at a point half way between stigmal and apex; fringes not nearly as wide as wings, but only about half width; club not terminating in several short spicules, but in a long stout spine; funicle globular, club shorter, 1 wider than long. Mandibles bidentate, club distinctly jointed.

Roma, October 6, 1911. Formerly identified as *americana*.

Oligosita longfellowi, new species.

Wings deeply infuscated at basal third (out to middle of marginal vein), widest across at that point. Like *biclavata*, but fringes very long, exceeding wing-width; color not intense lemon, but pale yellow, the metathorax and hind coxæ dusky; tarsal of hind legs (1 and 2) very elongate (moderately long in other), setæ from marginal vein much exceeding segment's length. Characterized by the narrowing fore wings.

Watsonville, March 12, 1919.

Oligosita iucunda, new species.

Like *pullicorpus*, but more robust, propodeum, extreme base of abdomen except at margin, and several abbreviated stripes across distad of this, orange. Eight lines *distinct* discal cilia; club nippleless, funicle distinctly longer than wide, smaller than the large pedicel. Knees not pale. Hind femur wide.

Nelson, February.

Oligosita ovidii, new species.

Same as *fasciatiipennis*, but face below eyes, thorax save median line, lateral margins scutum, same of scutellum but lateral margins obscurely, yellow; meson widely of propodeum, and apex of abdomen rather widely black. Discal cilia of fore wing absent; midlongitudinal line from apex, a little over half way to venation; a cross-line around apex caudad of this, a seta cephalad of it, cephalo-distad. Fringes three-fourths or more width. Funicle a bit longer than wide, somewhat shorter than pedicel.

Nelson, January.

Lathromeroidea domestica, new species.

Fore wings without oblique line of cilia from stigmal, hairs of club closer and softer, scape pallid. Fore wing without a caudal line of discal cilia extending to a point nearly opposite base of marginal, most of ciliation not cut off by the oblique line from stigmal, with a line going proximad past apex of stigmal for a short distance, meeting reciprocal line from disto-caudad in a point centrally. Club very short, cross-linear. Abdomen less acute at apex. Like genotype, abdomen above, legs, head and antennæ suffused yellowish.

Nelson, April 24, 1919, kitchen window.

Aphelinoidea iucunda, new species.

The same as *painei*, but extreme apex of abdomen and a distinct cross-stripe just before apex, clearly separated, black. Discal cilia *distinct* to venation.

Greenhills, Cairns, February 11, 1919.

Aphelinoidea nigrioculae, new species.

Club 1 long, over half of 2, twice longer than wide. Tarsals elongate in hind legs. Pedicel elongate, over half scape, exceeding club 1. Habitus of *Abbella subflavella*. Lemon; a narrow line along upper side of propleurum, another from apex of eye to mouth, and a large round spot filling abdomen's dorsum a bit before middle, jet; club dusky; appendages pallid. Fore wing deeply infuscated to apex venation, 25-30 lines discal cilia, reaching venation, fringes short. Hind fringes of hind wing lines discal cilia, but cephalic paired at apex. Apex club pallid.

Irvinebank, March 15, 1919.

Brachygramma atrum, new species.

Marginal vein with three equidistant setæ on its cephalic edge, two at middle. Fore wing infuscated to thickening of submarginal vein. Hind wings with three and a half lines discal cilia. Jet, vertex orange. Knees and tibial tips white. From apex a half line of discal cilia between 2 and 3. Marginal vein besides a smaller bristle between 1 and 2, but not on

margin, another back of 2, between it and the disto-caudal bristle.

Meringa, Cairns, October 28, 1918.

Urogramma lucrum, new species.

Discal cilia of fore wing in a single bent line from apex near cephalic margin and not reaching venation but long (excluding several setæ caudad of this line toward its middle). Like *minuta*, but dorsal abdomen (apparently) dull yellow with two cross-stripes of black at about middle fringes not very short but fifth wing-width (disto-caudad), hind wings with but one line of discal cilia, no distinct very short fringes cephalad while those caudad are long, distinctly more than the width (somewhat less than width in the other). Funicles much shorter, much smaller than pedicel (with two apparent transverse-linear joints). Vertex, face orange. Distal half fore wing dusky. Marginal with only three setæ, one near base, one at apex on cephalic margin, three at extreme apex of stigmal (2 in disk of other and four times along its cephalic edge). Costal cell obscure. Two ring-joints.

Irvinebank, March 15, 1919.

Lathromerella luci, new species.

Same as *occidentalis*, but hind wings narrow, dusky, with one complete, distinct line of discal cilia (a second, if present, indistinct), the fore wings also narrow, their fringes half the wing width, eleven lines discal cilia, dusky save distad; black, vertex, median line scutum and of scutellum more widely, orange, postscutellum and the transverse propodeum lemon. Apex fore wing more rounded, the setæ from edge of marginal vein longer.

Watsonville, March 12, 1919.

Pterygogramma hallami, new species.

Like genotype, but fringes of fore wing at apex irregular, very short cephalad of extreme point of apex, thence distinct and as long as with *acuminatum* (for rest of apex); apex wing sharper, irregularly convexed, a long caudal inclination

bearing the fringes; apex obtusely conical. Fore wing trifasciate, 1 from thickening of submarginal, 2 from apex stigmal, 3 fainter, largest, apical third; color as *semifuscipennis* but scutum with a long mark on each side, this narrow. Antennæ black.

Meringa, Cairns, November 26, 1918.

Xenufens tennysoni, new species.

Antennæ near mouth, scape thick, nearly twice the short pedicel. One ring-joint. Marginal about as long as thickened part of submarginal. Black, wings indefinitely dusky at base. Vertex, median line and lateral margins scutum orange. Funicle somewhat wider than long, half the pedicel, latter half the club in length. Tarsals not elongate. Twelve lines discal cilia. Clubs 1-2 transverse, 1 smaller, tibial tips pale.

Watsonville, March 12, 1919.

Haeckeliania domestica, new species.

Half smaller; abdomen conic-ovate, longer than thorax, ovipositor inserted at base; scape (at least at apex) pallid; marginal vein equal thick distal part submarginal; discal cilia less regular, the lines more crowded. Head yellow, two setæ on surface of submarginals thickening (in a longitudinal line) with distinct length (very minute in other). Trochanters white.

Nelson, April 23, 1919, kitchen window.

Tennysonianana gemma, new species.

Like *Oligosita*, but fringes fore wing minute as if absent, club 2-jointed, unarmed; fore tibia armed with sinne-like teeth above. Resembles *Pterygogramma*. Black; vertex, dorsal thorax except paraspide, a spot on axilla, cephalic half of scutum (all along meson to apex), marks on pleura, orange. Knees, tips of tibiæ, first tibia and tarsi pale. A distinct substigmal spot. Eighteen lines discal cilia, two cephalic in hind wings. Discal cilia fore wing in regular lines. Hind femur stout, coarsely scaly.

Nelson.

THE EARLIEST NAME OF THE YELLOW FEVER MOSQUITO

(*Diptera, Culicidæ*)

BY HARRISON G. DYAR

Under the above title, Mr. Frederick Knab showed (*Ins. Ins. Mens.*, iv, 59, 1916) that the name *argenteus* Poirét was an earlier name for this species than *fasciata* Fabricius, formerly in use. This is cited in a footnote in Howard, Dyar & Knab's monograph (*Mosq. N. & Cent. Am. & W. I.*, iv, 824 note, 1917), but the change was not adopted in the work, the species being called *calopus* Meigen. A still earlier name is *Culex aegypti* Linnaeus, which Mr. F. W. Edwards writes me can not be other than this species. Mr. Edwards has republished the description (*Bull. Ent. Res.*, ii, 265, 1911), and I believe this is correct. *Culex aegypti* dates from 1762 and clearly antedates all the other names.

However, Mr. Edwards expresses the desirability of making an exception in this case and retaining the name *fasciata*, on the ground, I presume, that it has been used so generally in literature. It does not seem to me that it is necessary to make such an exception. The name *fasciata* has been by no means universally used, it is doubly preoccupied, and is not particularly appropriate, or characteristic. In cases of doubt, the name *fasciata* Fab. could be added in parentheses.

Full synonymy has been given on page 182 preceding.

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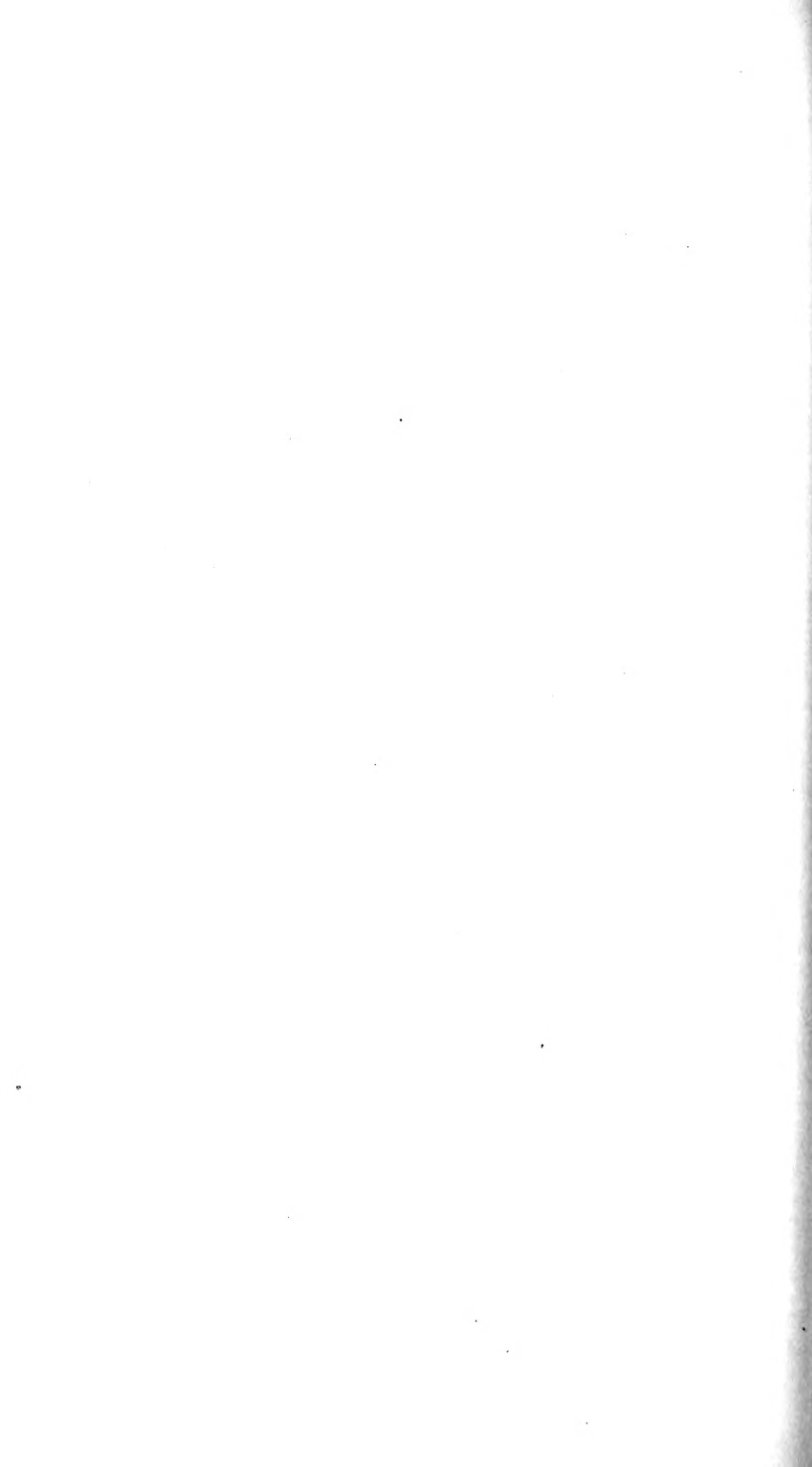
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